



Assigning WFD Status to Unmonitored Water Bodies in 2013-2018

A technical report outlining the methodologies used in surface waters and groundwaters

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Water Programme, Office of Evidence & Assessment, Environmental Protection Agency

ENVIRONMENTAL PROTECTION AGENCY
An Ghníomhaireacht um Chaomhnú Comhshaoil
PO Box 3000, Johnstown Castle, Co. Wexford, Ireland
Telephone: +353 53 916 0600 Fax: +353 53 916 0699
Email: info@epa.ie Website: www.epa.ie

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1 Introduction

The EU Water Framework Directive is the main piece of legislation aiming to protect and restore the quality of surface waters (rivers, lakes, estuaries and coastal waters) and groundwaters across the European Union. The Directive sets key environmental objectives for each body of water with information on water status being used to determine if these objectives have been met.

In Ireland, almost 60 per cent of identified Water Framework Directive (WFD) water bodies have a status assigned to them based on the results of the national water quality monitoring programme (see <https://www.epa.ie/publications/monitoring--assessment/freshwater--marine/irelands-national-water-framework-directive-monitoring-programme-2019-2021.php>). This means that status for those water bodies that are not monitored must be assigned by other means. The purpose of this technical paper is to outline how status is assigned to the remaining unmonitored surface waters and groundwaters.

2 Background

The WFD requires that all European Union Member States assess the status of their water bodies. The evaluation of status is used to determine if the environmental objectives set for a water body¹ have been achieved.

For surface water, these objectives are the achievement of good status, or at least good ecological potential, and the prevention of deterioration in status (Article 4(1)(a) of the WFD). Responsibility for determining surface water status was assigned to the EPA in SI 272 of 2009 (European Communities Environmental Objectives (Surface Waters) Regulations).

For groundwater, these objectives are the achievement of good chemical and quantitative status. Responsibility for determining groundwater status was assigned to the EPA in SI 9 of 2010 (European Communities Environmental Objectives (Groundwater) Regulations).

The WFD sets out in detail how status should be assigned for each identified water body type¹ by monitoring various biological and physicochemical elements. The elements to be monitored are prescribed by the Directive and monitoring results are compared against type-specific reference conditions to determine the status of water bodies. While the Directive requires that all water bodies are assigned a status it does not require that all water bodies are monitored. It is widely recognised that monitoring all water bodies is not economically or logistically feasible and therefore it is necessary to group 'similar' water bodies together for the purpose of assigning status. This is allowed for by the Directive as long as sufficient water bodies are monitored within a group to provide an accurate assessment of status of that group ([Common Implementation Strategy Guidance Document No. 7](#)). This grouping can be based on similar hydrological, geomorphological or geographical conditions or on similar land-uses or catchment impacts. Statistical analysis can also be used to group water bodies with similar characteristics. In all cases grouping must be technically or scientifically justifiable.

The WFD outlines criteria for the identification of discrete and significant elements of surface water (such as size) and requires that a representative number of water bodies are sampled for assignment of status. For example, in designing the operational monitoring programme, the Directive stipulates

¹ Water bodies are the basic unit of reporting used in the WFD. Member states must identify the location and boundaries of water bodies, the water category to which they belong (i.e. river, lake, transitional water, coastal water and groundwater) and their physical type within this category.

that “for bodies at risk from significant diffuse source pressures, **sufficient** monitoring points within a **selection** of the bodies in order to assess the magnitude and impact of the diffuse source pressures. The **selection** of bodies shall be made such that they are **representative** of the relative risks of the occurrence of the diffuse source pressures, and of the relative risks of the failure to achieve good surface water status”(Annex V, 1.3.2).

As indicated, approximately 60% of the surface and groundwater bodies in the State are currently monitored in the national WFD monitoring programme. This means that water status for those water bodies that are not monitored must be assigned by other means. This can either involve grouping of similar water bodies together for the purpose of assigning status, as described above, or by the use of expert judgement where grouping is not possible.

This technical paper outlines the methods applied to assign status to unmonitored WFD rivers, lakes, transitional and coastal and groundwater water bodies. Each water category will be dealt with under a separate heading.

3 Rivers

A total of 2,353 of the 3,192 WFD river water bodies (RWBs) were assigned an ecological status in the 2013-2018 status assessment using monitored data. The majority of the remaining 839 unmonitored RWBs were assigned ecological status using a clustering technique to group monitored and unmonitored water bodies with similar physical characteristics and catchment pressures. Monitored water bodies within these groups were used to assign status to other unmonitored water bodies in the same group.

3.1 Data Used

A range of physical attributes, pressure data (including risk characterisation²), status data and data from the EPA Source Load Apportionment Model (SLAM)³ was collated at the river water body level and considered for assessment.

The following parameters were used in the final assessment:

Physical attributes

- Catchment level (n=46)
- RWB code
- RWB physical typology
- Catchment area (taken from SLAM)
- RWB stream order (taken from SLAM)
- Latitude/Longitude

Pressure Attributes

- Risk characterisation Cycle 2 category (at risk, not at risk, review)

Information from SLAM Version 303 source apportionment model:

- Nitrogen point source inputs (kg/Ha/year)
- Nitrogen diffuse inputs (kg/ha/year)
- Phosphorus point source inputs (kg/Ha/year)
- Phosphorus diffuse inputs (kg/ha/year)

3.2 Statistical Method Applied

3.2.1 Donor Extrapolation Assessment using K-Means Clustering

The grouping exercise consisted of a statistical analysis of all the waterbodies in each catchment to cluster the areas according to their similarity using physical and pressure attributes including risk categorisation, typology and catchment characteristics. K-means clustering was undertaken in R programming language⁴. K-means clustering partitions a group of observations into a fixed number of clusters that share similarities and are dissimilar to the objects belonging to another cluster. Within each cluster the distance between the centre point of each RWB and all others in the cluster within the same catchment area was calculated. Unmonitored RWBs were assigned a status from the closest nearby RWB that was found within the same cluster and within the same catchment area.

² Risk of not achieving the WFD objectives set for that water body.

³ <https://www.epa.ie/publications/research/water/research-249.php>

⁴ RStudio Team (2020). RStudio: Integrated Development Environment for R. RStudio, PBC, Boston, MA URL <http://www.rstudio.com/>.

K-means clustering was undertaken using a range of available variables: typology, risk assessments, catchment characteristics and catchment pressures using the SLAM data for point and diffuse sources for phosphorus and nitrogen (Section 3.1).

Selecting Optimum number of Clusters

The data was examined to select optimum cluster numbers. An analysis using the “Elbow method” looked at the catchments with larger number of water bodies (> 50). The elbow method looks at the percentage of variance explained as a function of the number of clusters and selects the minimum number of clusters required to give the optimum modelling result. At some point the marginal benefit gained by adding extra clusters will drop, giving an angle in the graph. The number of clusters is chosen at this point, hence the “elbow criterion”. For larger clusters the selection of 20 clusters is generally supported with approximately 92% of the variation accounted for (Figure 3.1).

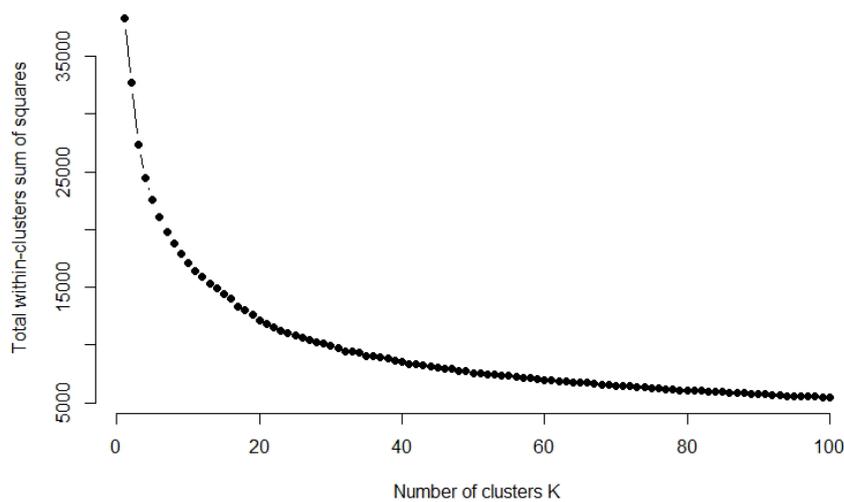


Figure 3.1 Elbow plot for catchments with large numbers of water bodies. Change in slope at n=20.

The remaining catchments were divided in to medium (30-50) and small numbers (<30) of water bodies. Catchment numbers 25D, 25B, 31, 01, 26F, 28, 40, 17, 08, 29⁵ were assessed separately and a cluster number of 10 selected. Catchments 13, 26B, 03, 11, 26A, 26E, 26G were analysed with 5 clusters (Table 3.1).

⁵ WFD catchments are numbered nationally. See <https://www.catchments.ie/data>

Table 3.1 Breakdown of Cluster numbers applied in the final assessment.

No. RWBs per catchment	Cluster number applied
>50	20
30-50	10
<30	5

3.2.2 Expert Judgement

A review of the extrapolated donor status results was carried out. Any available supplementary information about the unmonitored RWBs was used to validate the outputs of the clustering analysis. Where the supplementary information was not in agreement with the outputs of the clustering analysis expert judgement was used to assign status based on an evaluation of the available supplementary data. Expert judgement focussed on categorising water bodies as being “good or better” or “moderate or worse”. For reporting purposes, the status of these water bodies was reported as either ‘good’ or ‘moderate’, respectively.

The following supplementary information, when available, was considered in assigning the status category and was applied hierarchically:

- Information in supplementary reports (e.g. Local Catchment Assessment Reports).
- Information on nutrient concentration. Water bodies with elevated phosphate or ammonia concentrations were assigned less than good status.
- Information on the status of water bodies upstream and downstream of an unmonitored water body.
- Information on land use activities, particularly the extent of arable and urban land use.

Cross-border River Water Bodies

In the case of the cross-border RWBs, it was decided to use the Northern Ireland Environment Agency (NIEA) monitored RWB ecological status results for the period (based on data up to 2017) where available. This provided ecological status data based on monitoring for an additional 28 RWBs. On review of the NIEA data it was noted that in 3 other cross border RWBs, both the EPA and NIEA have carried out monitoring of the water body:

- CULLY WATER_010 (UKGBNI1NB060608235)
- CASTLETOWN_010 (UKGBNI1NB060608246)
- WATERFOOT_010 (UKGBNI1NW363604078)

In these RWBs, the status assessment outcomes were combined and the one-out-al-out rule used to assign final ecological status to the water body.

3.3 Results

A total of 3,113 river water bodies (97.5% of 3,192) were assigned an ecological status of which 2,381 RWBs had status assigned using available monitoring data (EPA & NIEA); 514 RWBs were assigned status using donor extrapolation (Table 3.2) and 218 RWBs were assigned status using expert judgement.

Table 3.2 Breakdown of Method of assessment used across all 3192 RWBs

Method of assessment used	Number RWBs	% RWBs
Monitored (EPA)	2350	73.6
Monitored (NIEA)	31	1.0
Grouping*	514	16.1
Expert Judgement*	218	6.8
Not Determined	79	2.5
Total No. RWBs	3192	100.0

*Status assignments derived using donor extrapolation or expert judgement will be reported as low confidence.

Table 3.3 outlines the final status result using all assessment techniques.

Table 3.3 The assignment of 2013-2018 status for all RWBs

2013-2018 RWB Ecological Status	No. RWBs	% RWBs
High	244	7.8
Good	1391	44.7
Moderate	919	29.5
Poor	550	17.7
Bad	9	0.3
Total assigned	3113	100
Total No RWBs	3192	
% Assigned	97.5	

4 Lakes

A total of 224 of the 812 WFD lake water bodies (LWBs) were assigned an ecological status in the 2013-2018 status assessment using monitored data. The remaining 588 lake water bodies required assignment of status by grouping and expert judgement. The groups used are based on the outcome of an EPA funded research project titled 'Predicting ecological status in unmonitored lakes using catchment land use and hydromorphological characteristics' (2011-W-FS-6)⁶. These lake groups reflect different hydrogeomorphological and pressure variations across Ireland. Lakes with monitored status were used as donor lakes to assign status to unmonitored lakes in the same group. The methodology used has been documented as part of the STRIVE research report and is not repeated here.

For the purpose of assigning status for the 2013-2018 period, the outputs from the STRIVE research project were reviewed and where appropriate, modified.

4.1 Review of Strive Project Outputs

4.1.1 Donor Lake Selection

Each of the donor lakes used in the original STRIVE project were reviewed. If deemed not to be suitable, alternative lakes were used as donors. The majority of donor lakes were left unchanged. Examples of lakes deemed not to be suitable to act as donors include drinking water abstraction lakes, Heavily Modified Water Bodies (HMWBs)⁷, Artificial Water Bodies (AWBs) and very large lakes. Lakes that were geographically close i.e. in the same hydrometric area or directly connected to an unmonitored lake, and with similar land use pressures, were used as preferred donor lakes.

4.1.2 Lake groups

Land use/pressure groups used in the original Strive project were also reviewed. The majority of groups were left unchanged.

4.1.3 Expert judgement

The outputs of the grouping exercise were reviewed using expert judgement. Any available supplementary information about the unmonitored lake water bodies was used to validate the outputs from the grouping exercise. Where the supplementary information was not in agreement with the outputs of the grouping exercise, expert judgement was used to assign status based on an evaluation of the available supplementary data.

The following supplementary information, when available, was considered in assigning status.

- Information from ortho-photographs of land use in the catchment of an unmonitored lake water body
- Supplementary monitoring data from contemporaneous monitoring programmes (e.g. information on lake macrophytes).
- Status information from monitored lakes hydrological connected to unmonitored lakes

⁶ <https://www.epa.ie/researchandeducation/research/researchpublications/researchreports/researchreport181.html>

⁷ HMWBs are water bodies that have had their hydromorphology significantly altered for a specified use and therefore cannot reach good ecological status.

4.2 Results

The results obtained from the grouping exercise and use of expert judgement is presented in Table 4.1 along with the results based on monitoring.

Table 4.1 The assignment of 2013-2018 status for all lake water bodies

2016-2018 Status	High	Good	Moderate	Poor	Bad	Unassigned	Grand Total
Monitored	17	96	72	28	11		224
Grouping	200	68	26	7			301
Expert Judgement	57	47	73				177
Not Determined						110	110
Grand Total	274	211	171	35	11	110	812

5 Transitional and Coastal Waters

For WFD assessment purposes, the saline waters of Ireland have been split into 110 coastal water bodies and 196 transitional (estuarine) water bodies. A subset of these water bodies are monitored and were chosen in a way that allows the information gathered in these areas to be used to provide a national picture of WFD status. The following approach was used to assign a status to the unmonitored water bodies.

5.1 Data Used

Water bodies were delineated into groups with similar pressures and characteristics with each group containing monitored water bodies. The grouping was undertaken at a regional level, similar to the River Basin Districts (RBDs) used in previous River Basin Management Plans (RBMPs). The data used were based on characterisation outputs, updated catchment parameters and available pressure data.

The set of parameters used to group the water bodies were:

Coastal:

- Typology of the water body (based on physical characteristic such as depth, exposure etc.)
- Average nitrogen export rate into each water body (weighted average)
- Average phosphorus export rate into each water body (weighted average)

Transitional

- Area of water body
- Size of the largest catchment discharging to water body
- Average nitrogen export rate into each water body
- Average phosphorus export rate into each water body

Lagoons (types CW10 and TW6⁸) which correspond to transitional and coastal lagoon water bodies were analysed separately with additional physical information on salinity regime and depth included in the analyses.

5.2 Statistical Method Applied

The grouping exercise consisted of a statistical analysis of all the water bodies in the region to cluster the areas according to their similarity. The similarity of each water body was calculated using a set of parameters based on their physical attributes and the pressures acting on them. A hierarchical cluster analysis was undertaken and then a similarity profile (SIMPROF) test was used to test for evidence of structure in the cluster analysis and to identify significant groups within the dataset. Figures 5.1 and 5.2 give examples of the outputs of the cluster analyses.

The ecological status from the monitored areas in these groups were then applied to the non-monitored areas to give an overall picture of the national status of all transitional and coastal water bodies. Each group had at least one monitored water body in it and the status assessment for this area was applied to the other water bodies.

⁸ WFD types for transitional and coastal waters.

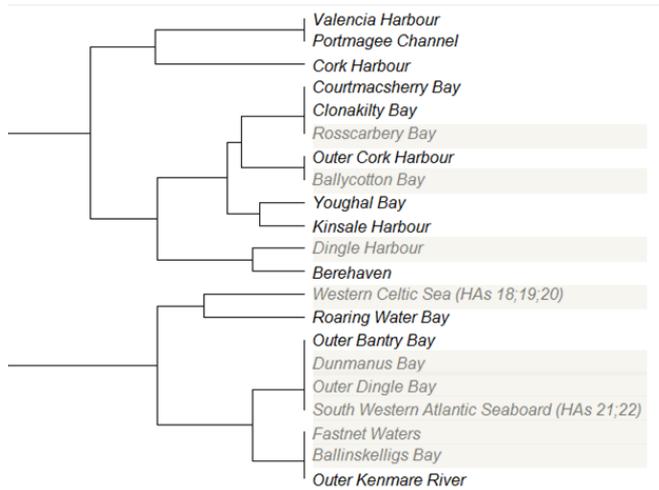


Figure 5.1 Example of a cluster analysis tree with groups of similar water bodies. Unmonitored water bodies in grey.

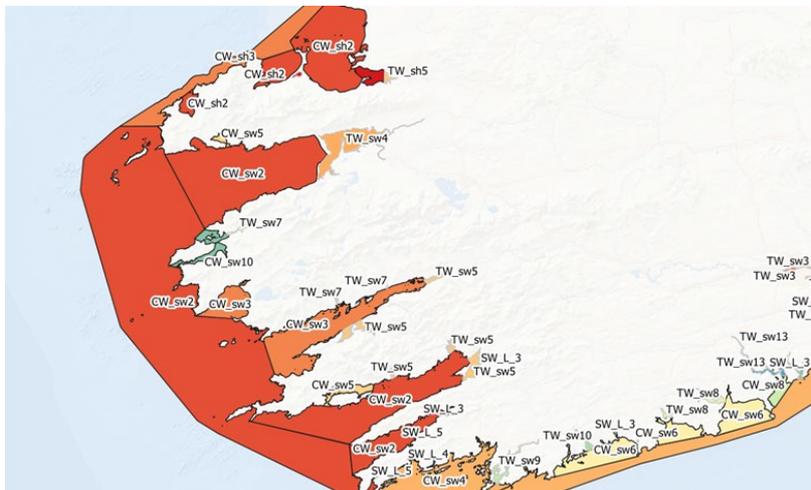


Figure 5.2 Example of cluster groups in the southwest of Ireland.

Only the physico-chemical and biological elements responding to diffuse pressures were used for the grouping. Issues due to localised or point sources are not included in the analysis. Where monitored status was less than good a ‘moderate’ status was assigned to grouped water bodies.

5.2.1 Expert Judgement

Validation of grouped status was undertaken where additional data were available. For example, if winter nutrient data was available to assess the EQS (Environmental Quality Standard) for available parameters this was compared to grouped status. In selected cases information from in situ monitoring buoys was used for additional validation.

5.3 Results

The final 2013-2018 status assessment of monitored and unmonitored transitional and coastal water bodies is presented in Table 5.1.

Table 5.1 The assignment of 2013-2018 status for all transitional and coastal water bodies using all methods.

2013-2018 Ecological Status	No. Transitional WBs	No. Coastal WBs
High	21	45
Good	34	34
Moderate	69	10
Poor	31	2
Bad	32	5
Total Assigned	188	97
Total no. Water Bodies	196	110
% Assigned*	96	88

*The majority of unassigned water bodies are small coastal lagoons that were not grouped.

6 Groundwaters

There are 514 groundwater bodies delineated nationally in Ireland, and many of these have similar hydrogeological characteristics and pressures. The origins of the groundwater monitoring network are described in EPA, 2006 and Craig *et al.*, 2006. There are 259 groundwater monitoring sites where groundwater quality is assessed. There are 128 groundwater level and 24 spring flow monitoring sites in the current groundwater quantitative monitoring programme.

138 of the 514 groundwater bodies have an associated groundwater monitoring point that is monitored by the EPA as part of the national groundwater monitoring programme. Investigative monitoring from EPA licensed activities, GSI, NPWS or local authority monitoring is available, and these data are used in the assessment of groundwater body status for an additional 97 groundwater bodies. Groundwater status assessments in Northern Ireland are combined with the status assessments in Ireland and the worst-case status outcome is used to determine the status for cross-border groundwater bodies.

In accordance with European guidance on [groundwater body delineation](#), [groundwater monitoring](#) and [groundwater status assessments](#); “*groundwater bodies may be grouped for monitoring purposes provided that the monitoring information obtained provides a reliable assessment of the status of each body in the group*”.

Groundwater body grouping has been used in the assessment of groundwater chemical status, where the pressures are widespread and diffuse in nature e.g. nutrient loss from agricultural activities.

Groundwater body grouping has not been used for the assessment of groundwater chemical status where the pressures are from point sources and/or are unique to a groundwater body e.g. from historic industrial contamination. For these groundwater bodies, chemical status has been determined using monitoring data for those individual groundwater bodies.

Groundwater body grouping has not been used in the assessment of groundwater quantitative status because groundwater bodies have been delineated along hydrogeological boundaries and therefore the impact of abstractions is localised to that groundwater body and associated receptors. For these groundwater bodies, where groundwater abstractions pose a risk to the environmental objectives for groundwater, the quantitative status has been determined using monitoring data for those individual groundwater bodies.

A groundwater classification methodology was developed and [published](#) for Ireland in 2010.

6.1 Principles of Groundwater Body Grouping

Groundwater body grouping has only been used in the assessment of groundwater chemical status, where the pressures are widespread and diffuse in nature. Groundwater chemistry varies spatially across an aquifer because of natural variations in hydrogeology and land use between recharge and discharge areas. It is unlikely that the hydrogeological characteristics of, and pressures impacting on, a single groundwater monitoring point will account for spatial variation in hydrogeology and range of diffuse pressures that exist across an entire groundwater body.

Therefore, to avoid making assessments and implementing measures based on water quality data from a single monitoring point, groundwater body groups with similar hydrogeological characteristics and pressures have been grouped. The aggregated water quality data from groundwater monitoring

points within the group of groundwater bodies has been used to determine the groundwater body status for the collective group of groundwater bodies.

Grouping of groundwater bodies is based on representativity and risk. Grouping takes account of:

- Pressures (diffuse)
- Pathway (hydrogeology)
- Risk (of failing to meet WFD objectives)
- Monitoring data (informing and validating the grouping)

A representative monitoring network group for diffuse/widespread pressures is achieved when the monitoring network adequately represents the variation in hydrogeology and land use pressures across a group of groundwater bodies. This is achieved when the Pollution Impact Potential (PIP) for the group of monitoring points represents the overall PIP of the group of groundwater bodies. The monitoring data validate the grouping i.e. if a high group PIP is expected for nitrate and the monitoring data indicate high groundwater nitrate concentrations, then the group of monitoring points is representative of the pressures and pathways in the group of groundwater bodies.

Overall, the average concentrations from the group of groundwater monitoring points are compared against the groundwater threshold values to determine status. If the average group concentration exceeds the threshold value, then all groundwater bodies in the group are at poor status.

Pressure, pathway and risk data has been taken from the PIP maps generated using the Catchment Characterisation Tool and the modelled loadings per hectare via the groundwater pathway from the SLAM model (Mockler *et al.* 2016, 2017). The 2013-2018 groundwater quality monitoring data has been used to inform and validate the grouping.

6.2 Groundwater Body Grouping Method

In total, there are 39 groundwater body groups that have been established in Ireland. These reflect the different hydrogeological, pressure risk characterisation variations across Ireland. All 514 groundwater bodies are assigned to a group for the groundwater body chemical status assessment relating to diffuse and/or widespread groundwater body pressures.

Where a groundwater body is also associated with a significant point source pressure, the groundwater status is determined using groundwater body specific monitoring data e.g. compliance monitoring for an industrial facility. This groundwater body and associated monitoring data are considered unrepresentative of the group of groundwater bodies for diffuse and/or widespread groundwater body pressures and they are excluded from the group / grouping assessment.

Groundwater groups for diffuse and/or widespread groundwater body pressures consider:

- a) **Aquifer category / flow regime** – the dominant aquifer / flow regime was determined for each groundwater body and for each contributing area (zone of contribution) to each monitoring point. The aquifer / flow regime data was determined using the national bedrock aquifer map and sand and gravel aquifer map as produced by the Geological Survey of Ireland (GSI, 2014).
- b) **Groundwater Body Status & Risk Characterisation** – the status and risk characterisation outputs from the 2010-2015 assessment were used to avoid grouping groundwater bodies that were at poor status with groundwater bodies at good status and to avoid grouping ‘not at risk’ groundwater bodies with ‘at risk’ groundwater bodies.

- c) **Nitrate impact potential** used the nitrate Pollution Impact Potential (PIP) maps generated using the Catchment Characterisation Tool and the modelled loadings per hectare via the groundwater pathway from the SLAM model (Mockler *et al.* 2016, 2017). From this we determined the relative nutrient losses (kg/ha) via groundwater for each groundwater body and each monitoring point zone of contribution. The PIP was categorised (in relative terms and for the purposes of this assessment only) as follows:
- i. PIP Category 1-2 was considered High Impact Potential
 - ii. PIP Category 3-5 was considered Mid Impact Potential
 - iii. PIP Category 6-7 was considered Low Impact Potential
- d) **Phosphate impact potential** used the phosphate PIP maps generated from the Catchment Characterisation Tool and the modelled loadings per hectare via the groundwater pathway from the SLAM model as described above for the nitrate impact potential.
- e) **Nitrate and phosphate water quality data** from the groundwater monitoring programme were used to further inform and validate the grouping and the representativity. The following were used for the 2013-2018 period:
- i. Average concentration per monitoring point
 - ii. Average concentration per GWB
 - iii. Average concentration per GWB Group
- f) **Representative groups** of groundwater bodies and associated monitoring point groups were achieved when the impact potential from the collective zone of contributions was comparable to that of the collective group of groundwater bodies, and when the water quality from the collective group validated the impact potential.
- g) **Groundwater body chemical status** was determined by comparing the aggregated average concentration for each of the 39 groups of groundwater bodies against the groundwater threshold value. If the aggregated average concentration for the group exceeded the threshold value, every groundwater body in the group was assigned poor status.
- h) **Individual average concentration exceedances** of the threshold value at monitoring points within a group were further investigated to determine if the zone of contribution to that monitoring point represented more than 20% of the overall groundwater body group area. This would have potentially led to the groundwater bodies being assigned poor status, but no monitoring point zones of contribution were greater than 20% of the groundwater body group area.

6.3 Groundwater Body Status Results

Table 6.1 shows the status breakdown for groundwater bodies for each assessment element for 2013-2018. Groundwater body grouping has been used in the assessment of groundwater body chemical status for the surface water body, GWDTE (groundwater dependent terrestrial ecosystems) and general chemical tests⁹, as each may be impacted by diffuse and/or widespread pressures. Groundwater body grouping has not been used for any of the other groundwater body test elements.

⁹ Industrial and point source pressures impacting on a single groundwater body are also assessed under each of these tests and its these individual groundwater body specific pressures that account for most of the poor status groundwater bodies.

Table 6.1 The assignment of groundwater status for all groundwater bodies

Groundwater Assessment Element	2013-2018	
	514 water bodies	
	Good Status	Poor Status
Surface Water Quality Test	510	4
GWDTE Chemical Test	512	2
Drinking Water Test	512	2
General Chemical Test	481	33
Intrusions Test	514	0
Surface Water Quantity Test	514	0
GWDTE Quantity Test	513	1
Water Balance Test	513	1
<i>Overall Chemical Status</i>	476	38
<i>Overall Quantitative Status</i>	512	2
Final Status Classification	474	40

7 WFD Status 2013-2018 -All Methods

Table 7.1 presents a breakdown of the WFD status of monitored and unmonitored surface and groundwaters for the 2013-2018 period.

Table 7.1 WFD Status 2013-2018 for monitored and unmonitored surface and groundwaters

	High	Good	Moderate	Poor	Bad	Unassigned	Total
Rivers							
Monitored	195	1051	671	455	9		2381
Unmonitored	49	340	248	95	0		732
Unassigned						79	79
Total	244	1391	919	550	9	79	3192
Lakes							
Monitored	17	96	72	28	11		224
Unmonitored	257	115	99	7			478
Unassigned						110	110
Total	274	211	171	35	11	110	812
Transitional							
Monitored	7	23	29	16	4		79
Unmonitored	14	11	41	15	28		109
Unassigned						8	8
Total	21	34	70	31	32	8	196
Coastal							
Monitored	19	26	8	1	1		55
Unmonitored	26	8	3	1	4		42
Unassigned						13	13
Total	45	34	11	2	5	13	110
Groundwater							
Monitored	n/a	132	n/a	6	n/a	0	138
Investigative Monitoring ¹⁰	n/a	65	n/a	32	n/a	0	97
Unmonitored	n/a	277	n/a	2 ¹¹	n/a	0	279
Unassigned	n/a	0	n/a	0	n/a	0	0
Total	n/a	474	n/a	40	n/a	0	514

¹⁰ Investigative monitoring includes the assessment of compliance monitoring from IED, IPC and Waste licences. It also includes monitoring and assessments undertaken by other state bodies such as NPWS, GSI and the local authorities.

¹¹ Both groundwater bodies are cross border bodies, where the status outcome has been determined by monitoring data gathered and assessment completed by the NIEA.

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AN GHNÍOMHAIREACTH UM CHAOMHNÚ COMHSHAOL

Tá an GCC freagrach as an gcomhshaol a chosaint agus a fheabhsú, mar shócmhainn luachmhar do mhuintir na hÉireann. Táimid tiomanta do dhaoine agus don chomhshaol a chosaint ar thionchar díobhálach na radaíochta agus an truaillithe.

Is féidir obair na Gníomhaireachta a roinnt ina trí phríomhréimse:

Rialáil: *Rialáil agus córais chomhlíonta comhshaol éifeachtacha a chur i bhfeidhm, chun dea-thorthaí comhshaol a bhaint amach agus díriú orthu siúd nach mbíonn ag cloí leo.*

Eolas: *Sonraí, eolas agus measúnú ardchaighdeán, spriocdhíríthe agus tráthúil a chur ar fáil i leith an chomhshaol chun bonn eolais a chur faoin gcinnteoireacht.*

Abhcóideacht: *Ag obair le daoine eile ar son timpeallachta glaine, táirgiúla agus dea-chosanta agus ar son cleachtas inbhuanaithe i dtaobh an chomhshaol.*

I measc ár gcuid freagrachtaí tá:

Ceadúnú

- Gníomhaíochtaí tionscail, dramhaíola agus stórála peitрил ar scála mór;
- Sceitheadh fuíolluisce uirbigh;
- Úsáid shrianta agus scaoileadh rialaithe Orgánach Géinmhodhnaithe;
- Foinsí radaíochta ianúcháin;
- Astaíochtaí gás ceaptha teasa ó thionscal agus ón eitleocht trí Scéim an AE um Thrádáil Astaíochtaí.

Forfheidmiú Náisiúnta i leith Cúrsaí Comhshaol

- Iníúchadh agus cigireacht ar shaoráidí a bhfuil ceadúnas acu ón GCC;
- Cur i bhfeidhm an dea-chleachtais a stiúradh i ngníomhaíochtaí agus i saoráidí rialáilte;
- Maoirseacht a dhéanamh ar fhreagrachtaí an údaráis áitiúil as cosaint an chomhshaol;
- Caighdeán an uisce óil phoiblí a rialáil agus údaruithe um sceitheadh fuíolluisce uirbigh a fhorfheidmiú;
- Caighdeán an uisce óil phoiblí agus phríobháidigh a mheasúnú agus tuairisciú air;
- Comhordú a dhéanamh ar líonra d'eagraíochtaí seirbhíse poiblí chun tacú le gníomhú i gcoinne coireachta comhshaol;
- An dlí a chur orthu siúd a bhriseann dlí an chomhshaol agus a dhéanann dochar don chomhshaol.

Bainistíocht Dramhaíola agus Ceimiceáin sa Chomhshaol

- Rialacháin dramhaíola a chur i bhfeidhm agus a fhorfheidmiú lena n-áirítear saincheistanna forfheidmithe náisiúnta;
- Staitisticí dramhaíola náisiúnta a ullmhú agus a fhoilsiú chomh maith leis an bPlean Náisiúnta um Bainistíocht

Dramhaíola Guaisí;

- An Clár Náisiúnta um Chosc Dramhaíola a fhorbairt agus a chur i bhfeidhm;
- Reachtaíocht ar rialú ceimiceán sa timpeallacht a chur i bhfeidhm agus tuairisciú ar an reachtaíocht sin.

Bainistíocht Uisce

- Plé le struchtúir náisiúnta agus réigiúnacha rialachais agus oibriúcháin chun an Chreat-treoir Uisce a chur i bhfeidhm;
- Monatóireacht, measúnú agus tuairisciú a dhéanamh ar chaighdeán aibhneacha, lochanna, uiscí idirchreasa agus cósta, uiscí snámha agus screamhuisce chomh maith le tomhas ar leibhéil uisce agus sreabhadh abhann.

Eolaíocht Aeráide & Athrú Aeráide

- Fardail agus réamh-mheastacháin a fhoilsiú um astaíochtaí gás ceaptha teasa na hÉireann;
- Rúnaíocht a chur ar fáil don Chomhairle Chomhairleach ar Athrú Aeráide agus tacaíocht a thabhairt don Idirphlé Náisiúnta ar Gníomhú ar son na hAeráide;
- Tacú le gníomhaíochtaí forbartha Náisiúnta, AE agus NA um Eolaíocht agus Beartas Aeráide.

Monatóireacht & Measúnú ar an gComhshaol

- Córais náisiúnta um monatóireacht an chomhshaol a cheapadh agus a chur i bhfeidhm: teicneolaíocht, bainistíocht sonraí, anailís agus réamhaisnéisiú;
- Tuairiscí ar Staid Timpeallacht na hÉireann agus ar Tháscairí a chur ar fáil;
- Monatóireacht a dhéanamh ar chaighdeán an aeir agus Treoir an AE i leith Aeir Ghlain don Eoraip a chur i bhfeidhm chomh maith leis an gCoinbhinsiún ar Aerthruaillíú Fadraoin Trasteorann, agus an Treoir i leith na Teorann Náisiúnta Astaíochtaí;
- Maoirseacht a dhéanamh ar chur i bhfeidhm na Treorach i leith Torainn Timpeallachta;
- Measúnú a dhéanamh ar thionchar pleananna agus clár beartaithe ar chomhshaol na hÉireann.
- Taighde agus Forbairt Comhshaol
- Comhordú a dhéanamh ar ghníomhaíochtaí taighde comhshaol agus iad a mhaoiniú chun brú a aithint, bonn eolais a chur faoin mbeartas agus réitigh a chur ar fáil;
- Comhoibriú le gníomhaíocht náisiúnta agus AE um thaighde comhshaol.

Cosaint Raideolaíoch

- Monatóireacht a dhéanamh ar leibhéil radaíochta agus nochtheadh an phobail do radaíocht ianúcháin agus do réimsí leictreamaighnéadacha a mheas;
- Cabhrú le pleananna náisiúnta a fhorbairt le haghaidh éigeandálaí ag eascairt as taismí núicléacha;

- Monatóireacht a dhéanamh ar fhorbairtí thar lear a bhaineann le saoráidí núicléacha agus leis an tsábháilteacht raideolaíochta;
- Sainseirbhísí um chosaint ar an radaíocht a sholáthar, nó maoirsiú a dhéanamh ar sholáthar na seirbhísí sin.

Treoir, Ardú Feasachta agus Faisnéis Inrochtana

- Tuairisciú, comhairle agus treoir neamhspleách, fianaise-bhunaithe a chur ar fáil don Rialtas, don tionscal agus don phobal ar ábhair maidir le cosaint comhshaol agus raideolaíoch;
- An nasc idir sláinte agus folláine, an geilleagar agus timpeallacht ghlan a chur chun cinn;
- Feasacht comhshaol a chur chun cinn lena n-áirítear tacú le hiompraíocht um éifeachtúlacht acmhainní agus aistriú aeráide;
- Tástáil radóin a chur chun cinn i dtithe agus in ionaid oibre agus feabhsúchán a mholadh áit is gá.

Comhpháirtíocht agus líonrú

- Oibriú le gníomhaireachtaí idirnáisiúnta agus náisiúnta, údaráis réigiúnacha agus áitiúla, eagraíochtaí neamhrialtais, comhlachtaí ionadaíochta agus ranna rialtais chun cosaint comhshaol agus raideolaíoch a chur ar fáil, chomh maith le taighde, comhordú agus cinnteoireacht bunaithe ar an eolaíocht.

Bainistíocht agus struchtúr na Gníomhaireachta um Chaomhnú Comhshaol

Tá an GCC á bhainistiú ag Bord lánaimseartha, ar a bhfuil Ard-Stiúrthóir agus cúigear Stiúrthóir. Déantar an obair ar fud cúig cinn d'Oifigí:

- An Oifig um Inbhuanaitheacht i leith Cúrsaí Comhshaol
- An Oifig Forfheidmithe i leith Cúrsaí Comhshaol
- An Oifig um Fhianaise agus Measúnú
- An Oifig um Chosaint ar Radaíocht agus Monatóireacht Comhshaol
- An Oifig Cumarsáide agus Seirbhísí Corparáideacha

Tugann coistí comhairleacha cabhair don Gníomhaireacht agus tagann siad le chéile go rialta le plé a dhéanamh ar ábhair inní agus le comhairle a chur ar an mBord.



Environmental Protection Agency
An Ghníomhaireacht um Chaomhnú Comhshaoil

Headquarters

**PO Box 3000,
Johnstown Castle Estate
County Wexford, Ireland**

T: +353 53 916 0600

F: +353 53 916 0699

E: info@epa.ie

W:

LoCall: 1890 33 55 99

Regional Inspectorate

McCumiskey House,
Richview, Clonskeagh Road,
Dublin 14, Ireland

T: +353 1 268 0100

F: +353 1 268 0199

Regional Inspectorate

Inniscarra, County Cork,
Ireland

T: +353 21 487 5540

F: +353 21 487 5545

Regional Inspectorate

Seville Lodge, Callan Road,
Kilkenny, Ireland

T +353 56 779 6700

F +353 56 779 6798

Regional Inspectorate

John Moore Road, Castlebar
County Mayo, Ireland

T +353 94 904 8400

F +353 94 902 1934

Regional Inspectorate

The Glen, Monaghan, Ireland

T +353 47 77600

F +353 47 84987

Regional Offices

The Civic Centre
Church St., Athlone
Co. Westmeath, Ireland
T +353 906 475722

Room 3, Raheen Conference Centre,
Pearse House, Pearse Road
Raheen Business Park, Limerick,
Ireland
T +353 61 224764

