
Early insights indicator report
**Nitrogen concentrations in
selected major rivers**
January-June 2024



**Early insights indicator report
Nitrogen concentrations in selected major rivers
January-June 2024**



**Water Quality Insights Report Bulletin
Vol 1**

December 2024

Version no. 1.1

Early insights nitrogen concentration indicator in selected major rivers January-June 2024

Overview

The purpose of this report is to provide an early insight into nitrogen concentrations in major rivers in Ireland on a 6-monthly basis, in advance of the more comprehensive annual water quality assessments which are published on an annual basis.

The report is based on the nitrate concentration data for 20 representative river monitoring sites which are situated at the most downstream monitoring locations on the major rivers around Ireland. A map of the locations of the sites and the catchments they represent is presented in Figure 1. This current report includes data for January to June 2024 inclusive. Comparisons are made with the same period in previous years for context. Analysis is also presented to demonstrate how representative these early insight indicator data when compared to data for the full national monitoring dataset which will be published in June 2025.

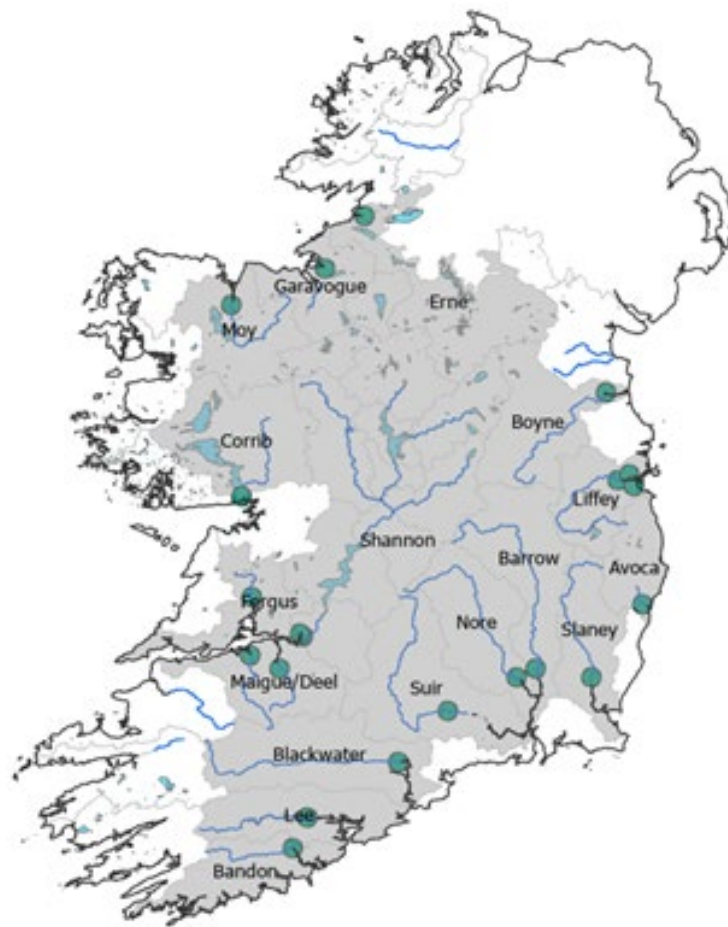


Figure 1. Location of the early insights nitrogen indicator monitoring stations and their catchments.

Early insight nitrogen concentration data at representative sites for Jan-Jun 2024

Figure 2 shows the average nitrogen concentrations for the period January to June for each year between 2016 and 2024, at the 20 representative sites. The data suggest that nitrogen concentrations in waters nationally have reduced in the first half of 2024 relative to other years, and that they are at the lowest they have been since 2016.

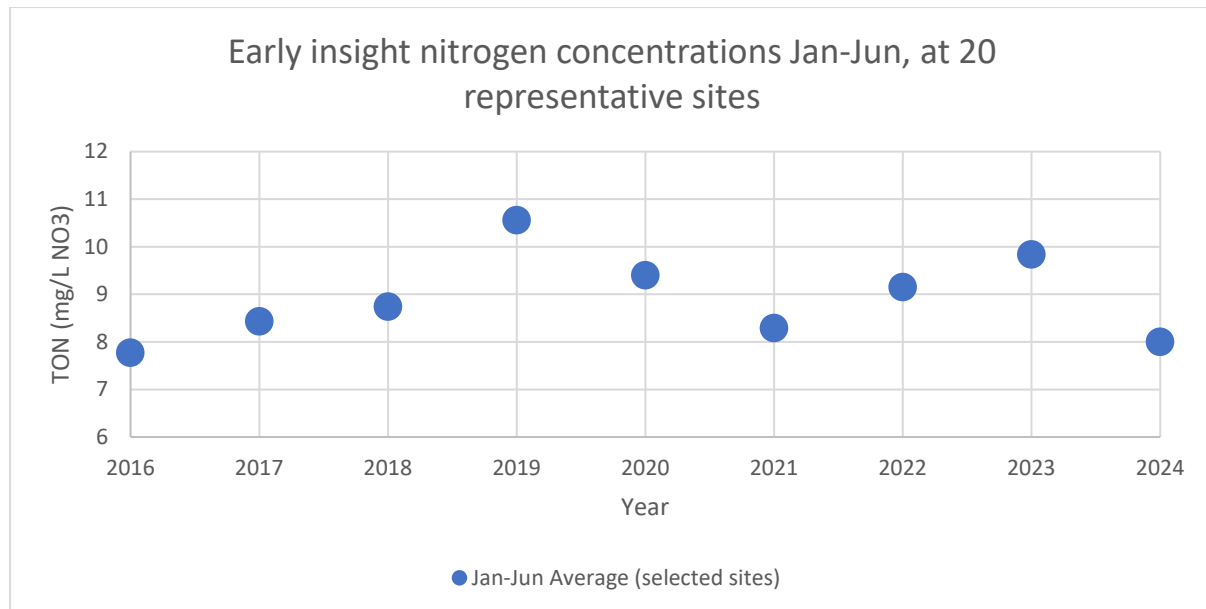


Figure 2. Early insight nitrogen concentrations for the Jan-Jun period of each year from 2016 to 2024 at 20 representative sites located around the country.

Early insight nitrogen concentration data at representative sites inside and outside the Catchments of Concern

Successive EPA reports have identified that nitrate concentrations are too high in the east, southeast and south of the country and that there are a number of Catchments of Concern¹ in those areas where nitrate concentrations need to be reduced to improve water quality. Figure 3 compares the Jan-Jun nitrate concentrations at the early insight representative monitoring sites that are located inside the Catchments of Concern, with the equivalent data for catchments in the west and northwest of the country which are currently largely meeting their nitrogen targets.

The data show that while the overall trajectory of change over time is proportionally similar inside and outside the Catchments of Concern, there is a marked difference in the absolute nitrate concentrations between the two groups of sites, which reflects the differences in farm practices, soil types and climate conditions in these regions.

¹ <https://www.catchments.ie/assessment-of-the-catchments-that-need-reductions-in-nitrogen-concentrations-to-achieve-water-quality-objectives/>

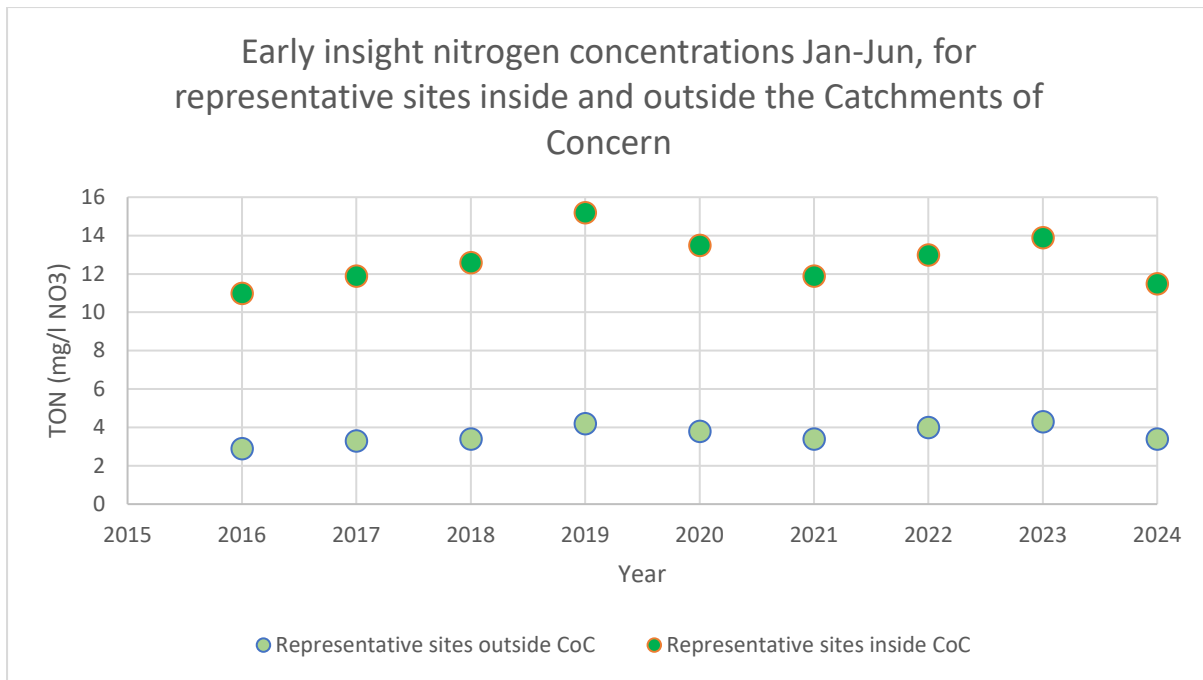


Figure 3. Early insight nitrogen concentrations for the Jan-Jun period of each year from 2016 to 2024, in major rivers inside the Catchments of Concern in the east, southeast and south where nitrate levels are too high, and in major rivers outside the Catchments of Concern in the west and northwest where the nitrogen targets are largely being met.

Background to the analysis

This analysis has been carried out using data from 20 representative locations at the most downstream monitored sites in 20 of the State's major river systems before they enter the transitional waters. These 20 representative sites have been selected for this analysis because:

- (a) they are monitored on a monthly basis and therefore have more data available than many of the other monitoring sites in the Nitrates Directive Monitoring network, which makes them more suited to a 6-monthly assessment. The full Nitrates Directive Monitoring network comprises over 1500 sites across all waterbody types².
- (b) as they are located at the downstream end of the large major river systems, they capture the majority of the national nitrogen load flowing to the marine environment. They are therefore representative of the nitrogen conditions nationally.
- (c) the relatively small number of sites facilitates the additional manual data quality control procedures that need to be carried out in a timely manner outside of standard EPA processes.

The more comprehensive annual assessments of nitrogen and phosphorus concentrations for all waters are published annually for the preceding year. This report is based on data for 20 representative river monitoring sites and provides an early insight only in between the annual water quality reports.

Nitrogen concentration data can be downloaded from Catchments.ie for individual monitored waterbodies as soon as the data become available, which can range from weeks to months from the date the sample was taken, depending on the station.

² [Water-quality-monitoring-report-on-Nitrogen-and-Phosphorus-in-Irish-Waters-2023-for-publication.pdf](https://www.epa.gov/water-quality-monitoring-report-on-nitrogen-and-phosphorus-in-irish-waters-2023-for-publication.pdf)

Appendix 1

How representative are the 20 early insights indicator sites compared to the full national nitrates monitoring dataset?

Figure 4 demonstrates how represent the 20 early insight indicator sites are compared to the full national nitrates monitoring dataset. The data show that the annual average nitrogen concentration data at the representative sites generally track with the same trajectory as the annual average concentrations from the full national monitoring dataset, although they are typically slightly higher (up to 5%) overall. The representative sites therefore present a slightly more pessimistic view of nitrate concentrations than the full national monitoring network, but overall they are considered to be broadly representative.

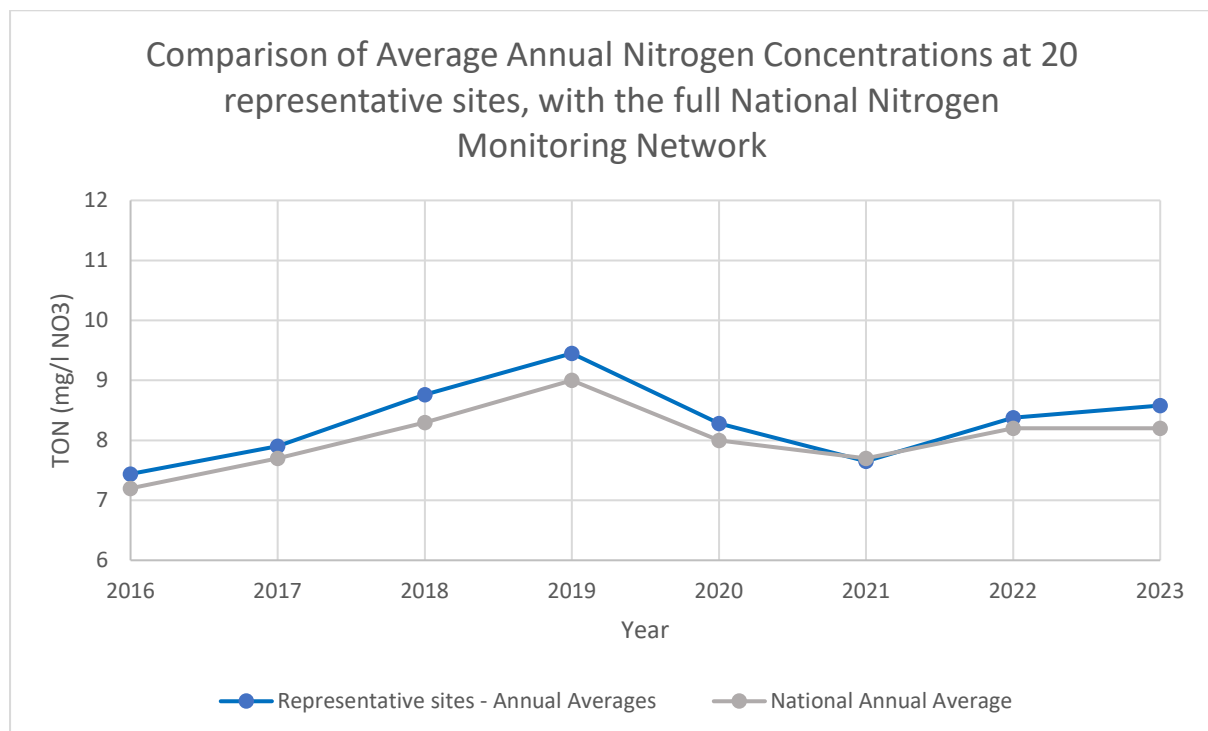


Figure 4. Comparison of the annual average nitrogen concentrations at the 20 representative sites compared to the national monitoring network, from 2016-2023.

How representative are the data for the first 6 months of the year, in comparison to the whole year, at the 20 representative sites?

Figure 5 demonstrates how representative the data for the first 6 months of a given year are at the representative sites, relative to the 12-month dataset at the same sites. The data show that the concentrations during the first 6 months of each year largely track with the same trajectory as the annual averages, although once again, at slightly higher concentrations (up to 15%) overall. The data for the first 6-months of the year therefore show a slightly more pessimistic outlook than the annual average. The data for the first 6 months of 2024 are also included for reference.

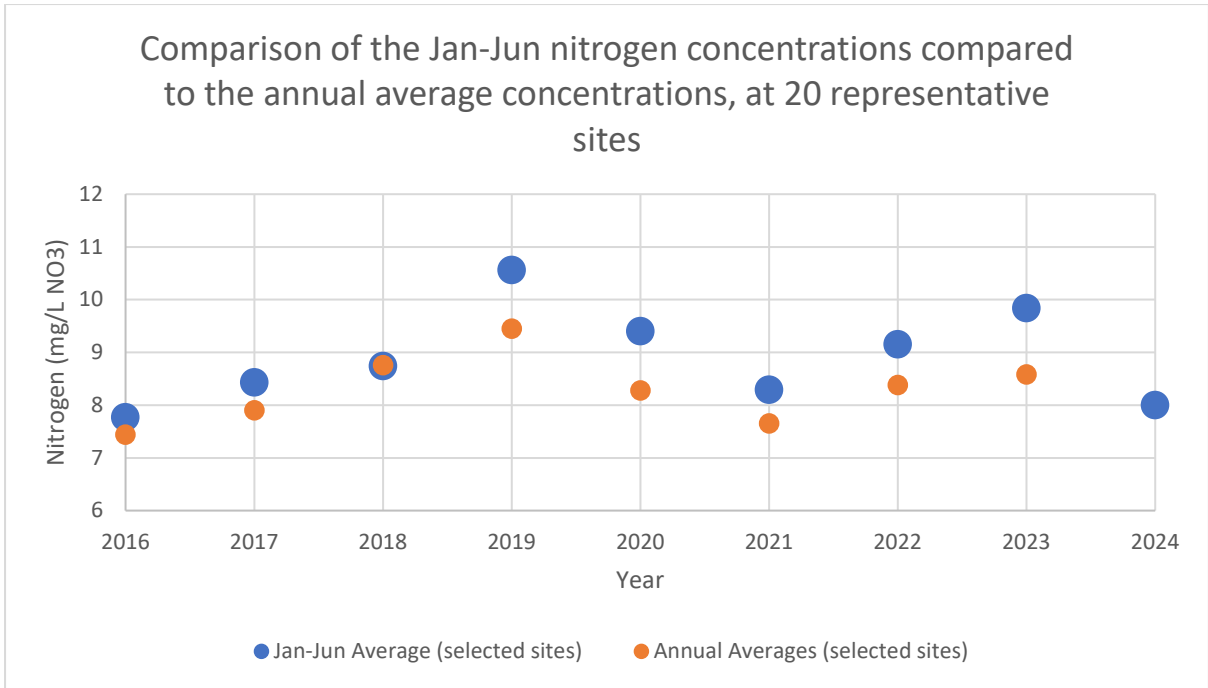


Figure 5. Comparison of the average nitrogen concentrations for the period Jan-Jun and the annual average concentrations, at the 20 representative sites.

Appendix 2 – Nitrogen Indicator Supporting Information

Catchment	Catchment of Concern	WaterbodyCode	StationCode	Catchments.ie Data Page
Avoca	No	IE_EA_10A031050	RS10A031050	https://www.catchments.ie/data/#/waterbody/IE_EA_10A031050
Bandon	Yes	IE_SW_20B020900	RS20B020900	https://www.catchments.ie/data/#/waterbody/IE_SW_20B020900
Barrow	Yes	IE_SE_14B013514	RS14B013500	https://www.catchments.ie/data/#/waterbody/IE_SE_14B013514
Blackwater	Yes	IE_SW_18B022700	RS18B022600	https://www.catchments.ie/data/#/waterbody/IE_SW_18B022700
Boyne	Yes	IE_EA_07B042200	RS07B042200	https://www.catchments.ie/data/#/waterbody/IE_EA_07B042200
Corrib	No	IE_WE_30C020600	RS30C020460	https://www.catchments.ie/data/#/waterbody/IE_WE_30C020600
Deel	Yes	IE_SH_24D021400	RS24D021400	https://www.catchments.ie/data/#/waterbody/IE_SH_24D021400
Dodder	No	IE_EA_09D010900	RS09D010900	https://www.catchments.ie/data/#/waterbody/IE_EA_09D010900
Erne	No	UKGBN11NW363604085	RS36E011600	https://www.catchments.ie/data/#/waterbody/UKGBN11NW363604085
Fergus	No	IE_SH_27F010700	RS27F010700	https://www.catchments.ie/data/#/waterbody/IE_SH_27F010700
Garavogue	No	IE_WE_35G010200	RS35G010200	https://www.catchments.ie/data/#/waterbody/IE_WE_35G010200
Lee	Yes	IE_SW_19L030800	RS19L030700	https://www.catchments.ie/data/#/waterbody/IE_SW_19L030800
Liffey	Yes	IE_EA_09L012350	RS09L012350	https://www.catchments.ie/data/#/waterbody/IE_EA_09L012350
Maigue	Yes	IE_SH_24M010900	RS24M010900	https://www.catchments.ie/data/#/waterbody/IE_SH_24M010900
Moy	Yes	IE_WE_34M021100	RS34M021100	https://www.catchments.ie/data/#/waterbody/IE_WE_34M021100
Nore	Yes	IE_SE_15N012400	RS15N012400	https://www.catchments.ie/data/#/waterbody/IE_SE_15N012400
Shannon	No	IE_SH_25N170970	RS25S750900	https://www.catchments.ie/data/#/waterbody/IE_SH_25N170970
		IE_SH_25S012600	RS25S012600	https://www.catchments.ie/data/#/waterbody/IE_SH_25S012600
Slaney	Yes	IE_SE_12S022300	RS12S022350	https://www.catchments.ie/data/#/waterbody/IE_SE_12S022300
Suir	Yes	IE_SE_16S022700	RS16S022700	https://www.catchments.ie/data/#/waterbody/IE_SE_16S022700
Tolka	Yes	IE_EA_09T011150	RS09T011150	https://www.catchments.ie/data/#/waterbody/IE_EA_09T011150

Data Processing Notes:

- Some waterbodies may have multiple stations – ensure *MonitoringStationCode* = the Station Code of interest.
- The parameter of interest is 'Total Oxidised Nitrogen (as N) – for some periods Nitrate as N was measured however the use of Total Oxidised Nitrogen is and has been a continuous component of the monitoring programme.
- Only EPA samples collected as part of the EPA's national monitoring programme were used in the analysis – these can be identified by the SampleCode field (from 2016 onwards) – format is YY-nnnnn where YY is a two digit representation of the year the sample was taken and nnnnn is an incrementing number
- Results were formatted to units of mg/l NO₃ by applying a conversion factor of 4.425 (multiply result in units of N by 4.4



Headquarters

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

T: +353 53 916 0600

F: +353 53 916 0699

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

E: info@epa.ie

W: www.epa.ie

LoCall: 1890 33 55 99



Printed on an environmentally friendly paper stock