



**First-tier Tribunal  
(General Regulatory Chamber)  
Nitrate Vulnerable Zones**

**NCN: [2023] UKFTT 125 (GRC)  
Appeal Number: NVZ/2021/0004**

**Considered on the papers on: 22 September 2022  
Decision issued on: 14 February 2023**

**Before**

**JUDGE OF THE FIRST-TIER TRIBUNAL SWANEY  
TRIBUNAL MEMBER FOLEY**

**Between**

**JEREMY COWLEY**

**Appellant**

**and**

**SECRETARY OF STATE FOR ENVIRONMENT, FOOD AND RURAL AFFAIRS**

**Respondent**

**DECISION**

**The appeal is allowed.**

**REASONS**

1. This appeal concerns Lossenham Priory Farm, Lossenham Lane, Newenden.
2. Regulation 4 of the Nitrate Pollution Prevention Regulations 2015 (the Regulations) requires the Secretary of State to keep under review the eutrophic state of fresh surface waters, estuarial waters and coastal waters. 'Eutrophic', in relation to water and as defined at regulation 2(1), means enriched by nitrogen compounds causing an accelerated growth of algae and higher forms of plant life. In excess, this produces an undesirable disturbance to the water's quality and balance of organisms.
3. The regulations provide that every four years the Secretary of State must, where necessary, revise or add to the designation of 'nitrate vulnerable zones' (NVZs). This is done by monitoring nitrate concentrates in order to identify water that is affected by pollution (or could be if the controls provided by the regulations are not applied), identifying land which drains into those waters and that contributes to its pollution,

and taking into account changes and factors unforeseen at the time of any previous designation.

4. The regulations define 'a relevant holding' as land and any associated buildings used for growing crops in soil, or rearing livestock for agricultural purposes, that fall wholly or partly in an NVZ. The occupier of a relevant holding must comply with rules concerning the use of nitrogen fertilisers and the storage of organic manure. Before the Secretary of State revises or adds to the designation of NVZs, regulation 5 requires him to publicise his proposals and send written notice to anyone appearing to be the owner or occupier of a relevant holding. Regulation 6 gives such an owner or occupier a right of appeal to the Tribunal. So far as still applicable, the only permitted grounds of appeal are that the relevant holding (or any part of it):
  - (a) does not drain into water which the Secretary of State proposes to identify, or to continue to identify, as polluted or which has been similarly identified in Wales or Scotland, [or]
  - (b) drains into water which the Secretary of State should not identify, or should not continue to identify, as polluted.

The Secretary of State refers to these as Type A and Type B appeals, respectively.

### **The respondent's decision**

5. A notice dated 21 October 2021 was served on the appellant, stating that there had been no change to the previous designation and that the land falls within NVZs S509 and S513.

### **The appellant's case**

6. The appellant lodged a notice of appeal. He challenges the respondent's decision on the basis that Defra should not identify the water into which the land drains as polluted.
7. In the notice of appeal the appellant stated the following in support of the appeal:
  - b) drains to water which the Secretary of State should not identify, or continue to identify, as being polluted.

Within both NVZ's (sic) associated with this appeal, the main channel has 'good' water quality that passes the NVZ criteria. Failures of the criteria only occur on small tributaries immediately downstream of sewage discharges. We believe the assessments undertaken by Defra have failed to consider the undue influence of these discharges. These monitoring points are not representative of the catchment as a whole, which has very good water quality.

We have submitted requests to obtain effluent discharge quality data from Southern Water and additional water quality monitoring data from the

Environment Agency. These data will be analysed and presented within the expert witness submission.

8. The substance of the appellant's appeal is that there is undue influence from point sources at the failing sampling points and that those sample points are not representative. He seeks re-designation of the relevant holding.

### **The respondent's response to the appeal**

9. Following directions, the Environment Agency (on behalf of the Secretary of State) provided a response to the appeal pursuant to rule 23 of the Tribunal Procedure (First-tier Tribunal) (General Regulatory Chamber) Rules 2009 (the Procedure Rules). It was confirmed that the appeal was contested because:

- a. In our opinion the information provided by the appellant does not constitute significant new information or evidence to remove the appealed land from designation. The original data reports for NVZ S509 and S513 (Annex 2 and Annex 3) provide a sufficient level of confidence that all of the relevant waters have been identified correctly as polluted or likely to become polluted. The Appellant intends to submit expert evidence for this appeal. Following submission, we request the right for our technical team to evaluate the evidence submitted and provide a full response.

- b. The evidence provided by the appellant does not demonstrate that the methodology described in Annex 4 has been incorrectly applied to the available data. The Appellant intends to submit expert evidence for this appeal. Following submission, we request the right for our technical team to assess the evidence submitted and provide a full response. The methodology was developed with the Department for Environment, Fisheries and Rural Affairs' (DEFRA) Methodology Review Group<sup>10</sup> to ensure its suitability and robustness.

### **The evidence**

10. The respondent relied on the following evidence:
  - (i) NVZ ID S509 datasheet for individual NVZ.
  - (ii) NVZ ID S513 datasheet for individual NVZ.
  - (iii) Designation methodology dated December 2016.
  - (iv) Map of the holding.

### *Appellant's first technical response*

11. The appellant provided a technical response in which it is asserted that the failing monitoring points should have been subject to a detailed analysis, including predictive modelling, in the 2012 designation round to see if they were unduly influenced. It is contended that had that detailed analysis been undertaken, the affected monitoring points would have been excluded and both NVZs would not have been re-designated.

12. In addition, it is stated that water quality analysis shows that the two critical failing monitoring points have significantly higher nitrate concentrations than other monitoring points, despite those two points only sampling approximately 0.5% of their respective catchment area.

*Respondent's reply*

13. The respondent provided a response to this and continued to contest the appeal on the basis that the worst performing tributaries in both NVZs continue to fail. The respondent asserted that the agreed method had been followed.
14. In respect of the claim that the failing monitoring points were unduly influencing water quality and that detailed analysis should have been carried out in 2012, the respondent asserted that the failing monitoring points were located outside the mixing zone of upstream point source effluent discharges and that further analysis was not required. The respondent did not accept that there was any undue influence.
15. The respondent disputed that the percentage of the catchment area covered for failing points was relevant in order to be included in the designation process.

*Appellant's second technical response*

16. The appellant provided a second technical response. In response to the respondent's point that the percentage of the catchment area covered by a monitoring point is not relevant to inclusion, it is asserted that while this is correct, a monitoring point must nevertheless be representative of the waterbody. The appellant contends that the small catchment area shows that the issue is localised, which is a consideration in the assessment of undue influence.
17. The appellant maintains the assertion that the disputed monitoring points are unduly influenced by point source discharges and that they are not representative of the catchment.

*Respondent's reply*

18. The respondent asserts that the data relied on by the appellant is limited to historical years and is of limited relevance in drawing conclusions on the point source nitrogen mass load contribution over more recent years. The respondent attempts to estimate undue influence by combining the available effluent discharge data with river water quality data and modelled catchment flow rates.
19. The respondent acknowledges that there are limitations to the assessment due to the sparse dataset. The respondent also acknowledges that summer peaks in the TIN concentration data reflect that during dry weather, flow dilution is limited and that the point source contribution exceeds 80% of the nitrogen mass load.

### *Appellant's third technical response*

20. The appellant provides an analysis of the respondent's modelling. The appellant notes the limitations of the modelling when applied to smaller catchments of less than 5 km<sup>2</sup> and points out that all the failing monitoring points are located within catchments with areas of 0.45 to 1.6 km<sup>2</sup>.
21. The appellant extracts the dilution ratio for the three relevant monitoring points noting that all are less than 1:10. This is significant according to the appellant, as a dilution ratio of 1:10 or less has the potential to result in undue influence.
22. Regarding the respondent's assessment of the annual mean nitrogen mass, the appellant points out that the method used differs from that set out in the methodology for undue influence. The respondent's results are not calibrated to SIMCAT or other land use models. The appellant contends that more weight should be given to observed water quality data than results estimated through uncalibrated modelling.
23. The appellant repeats the assertion that all three disputed monitoring points are subject to undue influence and that none is representative of the catchments.

### **Findings and reasons**

24. There are essentially three issues in this appeal:
  - (i) Was the screening process to assess undue influence correctly undertaken?
  - (ii) Are failing monitoring points unduly influenced by upstream point source discharges?
  - (iii) Are the failing monitoring points representative of the catchment?

#### *Was the screening process undertaken correctly?*

25. The process for excluding any monitoring point that is unduly influenced by point source discharge is a two stage one. First, there is a screening test which identifies monitoring points which *might* be unduly influenced. The second stage is to apply the exclusion criteria.
26. The respondent refers to the 2017 methodology (page 301), but relies on the findings of 2012 workshops in maintaining that the monitoring points are representative. The appellant uses the 2012 screening criteria, as they are more explicit, and given the respondent's reliance on the 2012 outcomes, we consider that this is appropriate. Depending on the answers to the screening questions, the monitoring point will pass or fail. If it fails, then it is necessary to apply the exclusion criteria.
27. There are three monitoring points that are relevant in this appeal; two in S509 (numbers E0001746 and E001756) and one in S513 (E001712). That these are the three relevant monitoring points which are material to the designation of both NVZs is not disputed by the respondent.

28. The screening test involves answering the following questions:

1. Is the monitoring point immediately downstream from an effluent discharge?

All three monitoring points are downstream from an effluent discharge.

2. If yes, estimate the distance downstream from the effluent discharge.

1746 is 150m and 1756 is 300m downstream of sewage treatment discharges. 1712 is 165m downstream of a sewage treatment discharge.

3. Is the monitoring location within the mixing zone of a point source discharge?

None of the monitoring points are in the mixing zones of the point source discharges.

4. Estimate the likely dilution of effluent (<1:10 represents low dilution).

Based on the 2012 datasheets, the estimate of point source discharge dilution (ratio) is 4.8 for 1746 and 355.1 for 1756. The appellant disputes the accuracy of the ratio for 1756 because although it is on a small tributary, it has the same dilution ratio as one on the main stem. That it is on a tributary is not in dispute. Moreover, the elevated TIN confirms that there is a low dilution ratio. The ratio for 1712 is 2.4. We accept on the balance of probabilities that the dilution ratio of 1756 is likely to be erroneous and we find that the ratio for all three monitoring points is low.

5. Does ammonia form a significant portion of total TIN as N concentration at the monitoring location?

The appellant asserts that ammonia is contributing to the failure of all three monitoring points and concludes that the sites fail on TON. The respondent has not specifically disputed this, but we note that no evidence has been adduced to support the appellant's conclusions and none is cited.

6. Do peaks in concentration occur in the summer?

Yes, nitrogen concentrations for all three monitoring sites show clear seasonal variations with peaks in the summer. This is consistent with point source discharge being the dominant sources. Discharges are likely to be consistent year round, but there is reduced dilution in summer months. This is in contrast with main stem monitoring points which show peaks in the winter and troughs in the summer which is consistent with a dominant agricultural/diffuse source.

7. Does the land use model predict a 95<sup>th</sup> percentile above the N target?

No. There are significant discrepancies between land use modelling and the data. Based on the datasheets, land use modelling significantly underestimates the concentrations measured at the failing monitoring points.

29. We find that on the basis of the evidence before us, all three monitoring points fail the screening test and that the exclusion criteria ought to have been applied. We therefore find that the answer to the first question posed is no, the respondent did not undertake the screening process to identify possible undue influence correctly.
30. We therefore move on to decide whether or not point source effluent does in fact unduly influence any/all of the failing monitoring points and therefore whether they should be excluded.

*Are any/all of the monitoring points unduly influenced?*

31. The exclusion criteria are as follows:

1. Is the site in a mixing zone?

No, all three monitoring points are outside the mixing zone. This was not disputed by the appellant.

The respondent's position that it was not necessary to go any further in applying the exclusion criteria was wrong. Although it is true that if a monitoring point *is* within a mixing zone it is automatically excluded, there is nothing in the methodology which suggests that if the answer to this question is no, the monitoring point is automatically included.

The fact that a monitoring point is outside the mixing zone does not exclude the possibility that it is nevertheless unduly influenced by point source effluent. In addition, monitoring data are required to be representative of the catchment as is acknowledged in the 2017 methodology. NVZs are only required where water is polluted, as long as the monitoring data is representative of the nitrogen pollution in the catchment. There are separate criteria set out in the methodology for determining the representativeness of monitoring sites.

2. It is located on a tributary or main stem?

All three failing monitoring points are on tributaries which is not disputed by the respondent and which is confirmed by reference to relevant maps.

3. If the monitoring sites are on tributaries, are there other monitoring locations in the waterbody?

Yes, there are other monitoring points on the main stem.

4. If yes, is the nitrate pollution localised?

Yes, nitrate pollution is localised. The datasheets show that the TIN concentrations at the failing monitoring points are significantly different to concentrations at other monitoring points in the catchment.

5. If pollution is localised, calculate the percentage of effluent contribution to TIN. If it is more than 80%, the monitoring point is excluded.

This step was not undertaken by the respondent in either 2012 or 2017, but arguably should have been given the answers to questions 1 to 4.

Table 6 at page 332 of the bundle shows that for each of the years 2000 to 2006, effluent discharge contribution to TIN for monitoring point 1746 was in excess of 80%. Table 8 at page 334 shows that for the years 2000 to 2008, it was in excess of 80% in four out of seven years for monitoring point 1756. Table 10 at page 335 shows that for the years 2000 to 2006 it was in excess of 80% in two out of seven years.

At page 336 the respondent acknowledges that in the summer, the TIN concentration data shows that dilution is limited and that point source contributions exceed 80%. In accordance with the 2012 methodology, that ought to have excluded all three monitoring points. The respondent relies on the fact that in winter agricultural contributions increase through higher rainfall and increased run-off for not excluding them. We do not consider that there is anything in the methodology which suggests that a monitoring point can only be excluded if effluent contributions to TIN exceed 80% all of the time.

32. We find on the balance of probabilities that all three monitoring points meet the criteria for exclusion.

*Are the failing monitoring points representative?*

33. The methodology sets out five questions to be answered in determining whether a failing monitoring point is representative of the catchment:

1. Is the monitoring location within the mixing zone of a point source discharge?

No, see above.

2. Are the 95<sup>th</sup> percentile TIN as N estimates consistent with monitoring points up and downstream, and with monitoring points with similar land uses?

No, the three monitoring points are significantly different to other monitoring points in the catchment and are not consistent with land use modelling.

By contrast, in S509 monitoring point E001543 is the most downstream monitoring point which accounts for both agricultural and sewage treatment works inputs across 94% of the catchment. That this is the most representative site in the catchment is not disputed. It does not exhibit undue influence of any point source, but has a seasonal signature indicative of diffuse (agricultural) nitrogen pollution. That the combined seasonal signal of all sources across the catchment is agriculturally dominated indicates the predominance of agricultural loading to the main stem river and supports the conclusion that the



monitoring points on tributaries downstream of sewage treatment works are not representative of the catchment. The current 95<sup>th</sup> percentile TIN of 5.6 mg/l recorded at 1543 is consistent with other monitoring points on the main stem of the river and land use modelling.

In S513 monitoring point E001706 is the most downstream monitoring point. It accounts for inputs across approximately 80% of the catchment. The 2020 95<sup>th</sup> percentile TIN of 7.84 mg/l is consistent with other monitoring points on the main stem of the river and with land use modelling. The respondent's estimate for 1706 was 16.71 mg/l. The respondent states that the discrepancy between the two methods is a reflection of an issue with data volume and the result would not have been used to designate a new NVZ. We prefer the appellant's estimate. It is consistent with the water quality history of the monitoring point.

3. Are the observed 95<sup>th</sup> percentile TIN as N estimates consistent with expectations given the catchment of the monitoring location?

No, the three monitoring points are significantly different to expectations given the catchment of the monitoring location.

4. Is the catchment of the monitoring point wholly urban?

No, based on the relevant maps, neither catchment is wholly urban.

5. Does ammonia form a significant portion of total TIN as N concentration at the monitoring point?

See above, there is no data on which to conclude that it does.

34. For the reasons set out above, we find on the balance of probabilities that none of the three failing monitoring points is representative of the catchments.

### **Conclusions**

35. In summary we find:

- (i) The screening process to assess undue influence was not correctly undertaken.
- (ii) All three failing monitoring points are subject to undue influence from point source discharges.
- (iii) None of the three failing monitoring points is representative of the catchments in which they are located.

36. On that basis we find that the designation is incorrect in respect of both S509 and S513 and that the appellant's land drains to water which the respondent should not identify, or continue to identify as polluted.

37. We apologise to the parties for the delay in finalising this decision.

Signed

Date 14 February 2023

Judge J K Swaney  
Judge of the First-tier Tribunal