



**First-tier Tribunal  
(General Regulatory Chamber)  
Welfare of Animals**

Appeal Number: NVZ/2021/0010

Neutral Citation Number: [2023] UKFTT 01001 (GRC)

**Considered on 22 September 2022 on the papers  
Decision given on 28 November 2023**

**Before**

**JUDGE OF THE FIRST-TIER TRIBUNAL J K SWANEY  
TRIBUNAL MEMBER A FOLEY**

**Between**

**EDWARD BARHAM**

Appellant

**and**

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

Respondent

**DECISION**

**The appeal is allowed.**

**REASONS**

1. This appeal concerns NVZ S508 (Newmill Channel downstream of A28) and NVZ S513 (Hexden Channel). NVZ S513 has been dealt with under appeal NVZ/2021/0004 and is addressed only briefly here.
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 S508 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 or continue to identify the water into which the land drains as polluted. He indicated that he would provide expert evidence in support of his appeal by 19 January 2022. He sought re-designation of the NVZs on the basis that they had been incorrectly designated.

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

7. 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 S508 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 to ensure its suitability and robustness.

### **The evidence**

8. The respondent relied on the following evidence:
  - (i) NVZ ID S508 datasheet for individual NVZ.
  - (ii) NVZ ID S513 datasheet for individual NVZ.
  - (iii) Designation methodology dated December 2016.
9. The appellant provided two detailed technical responses in respect of NVZ S508. In addition, he relied on the fact that another appeal NVZ/2021/0004 had been made in respect of NVZ S513. We note that both appellants were represented by the same representative. This panel determined appeal NVZ/2021/0004 and we adopt our findings in relation to S513 for the purposes of the present appeal. Accordingly, the discussion below relates solely to S508.

#### *Appellant's first technical response*

10. In the first technical response it is asserted that the single failing monitoring point in S508 is unduly influenced by point source discharge from a sewage treatment works and should have been excluded. It is asserted that had the failing monitoring point been excluded, the land would not have been designated.

#### *Respondent's reply*

11. The respondent's reply states that the appeal relates to NVZs S508 and S509. This is not correct. The appeal relates to S508 and S513.
12. S508 was first designated in the 2009 review when monitoring point E0001673 (MP1673) was classed as a confident fail. The respondent explains that it was also classed as a confident fail in 2013 and 2017, and in the current review, with the Total Inorganic Nitrate (TIN) 95<sup>th</sup> percentile assessed as 19.11 mg/l, above the threshold of 11.3mg/l.
13. The respondent relies on a previous appeal made by the appellant in respect of the 2017 designation (NVZ/2017/0014), where the tribunal found that agriculture was making a significant contribution to nitrate pollution at MP1673. The previous tribunal dismissed the appellant's appeal and held that S508 was correctly designated. The respondent asserts that the appellant has provided no significant new evidence since that appeal was determined and has failed to demonstrate that the agreed methodology has not been applied properly.
14. The respondent relies on a workshop discussion as set out in the S508 Datasheet and although it is acknowledged that monitoring point E0001669 (MP1669) was more representative than MP1673, it is asserted that MP1673 is not unrepresentative. The respondent considers that because MP1673 is outside the mixing zone of the sewage treatment works, it is not unduly influenced by point source discharge.

15. The respondent notes that the designation is based on the worst monitoring point in the waterbody and that there is no requirement for more than one monitoring point to fail in order for a designation to be made.
16. The respondent does not accept that nitrate pollution at the failing monitoring point is entirely due to the sewage treatment works because TIN concentrations of 4-6mg/l have been observed upstream of the works. In addition, 75% of S508 is covered by permanent grassland or arable land use which are both high risk agricultural land uses. The respondent concludes that agriculture is a significant contributor to TIN concentrations in S508. Notwithstanding this, the respondent acknowledges that if the sewage treatment works was not present, 'then it is possible that the water quality in the Newmill Channel would not exceed the threshold of 11.3 mg/l as TIN'.

*Appellant's second technical response*

17. The appellant's second technical response sets out a number of matters on which the parties agree. What remains in dispute is 1) why other methodology compliant monitoring points were excluded from the 2020 assessment, especially in light of the respondent's statement that MP1669 is more representative of the catchment; and 2) whether the methodology was correctly applied in the current or previous reviews.
18. Specifically, the appellant asserts that the failing monitoring point is unduly influenced by point source discharge and that the screening process to identify undue influence has not been undertaken. The appellant argues that the monitoring point would have been excluded had the proper screening process been undertaken.
19. In addition, the appellant considers the summary of flow data generated from Qube software provided by the respondent and asserts that it implies that previous flow data relied on by the respondent is erroneous and should be disregarded. The appellant points out that the arguably erroneous data was relied on by the respondent in the appellant's appeal in 2017 to support the continued designation of S508.
20. The appellant asserts that as there have been no failures of monitoring points upstream of the sewage treatment works since prior to 2010, and that the most representative monitoring point has observed TIN concentrations below 9.2mg/l since 2013 (save for one peak in 2016 which is likely to be attributable to storm Angus), it is highly likely that the threshold of 11.3mg/l would not be exceeded if the sewage treatment works monitoring point was removed from the catchment.
21. The appellant points out that TIN concentrations in the catchment are generally improving and that this can only be accounted for by falling agricultural discharges given that TIN concentrations at the sewage treatment works remain constant/have increased.
22. In light of the failure to undertake landuse modelling in 2017 and 2020, despite the catchment meeting the minimum area requirement, the appellant contends that the evidence supporting the designation is not clear. He asserts that this is contrary to the requirement of the methodology that a designation must be based on clear evidence.

*Respondent's reply*

23. The respondent accepted that monitoring points were excluded in the 2020 review stating that this was due to a refinement in approach because the Quantile Regression method is very sensitive to sudden drops in data volume and because sample quality issues depend on sample point type. Specifically, the respondent states that MP1690 and MP1692 were excluded due to sample point type. The respondent states that a precautionary approach was adopted because those two monitoring points were of a different type and may not have been representative of the river. In any event, the respondent notes that the exclusion of those monitoring points had no bearing on the designation, which was based on MP1673, the worst performing monitoring point.
24. The respondent relied on the workshop discussion (page 223, appeal bundle), stating that while MP1669 was more representative, MP1673 was not unrepresentative and that it was therefore appropriate to rely on it in designating S508.
25. The respondent acknowledged that there is some atypical behaviour of the flow data, but noted that designation is based on the worst performing monitoring point and that in the most recent review, the TIN 95<sup>th</sup> percentile for MP1673 was assessed at 19.11mg/l, in excess of the threshold of 11.3mg/l.
26. In respect of undue influence, the respondent contended that the historical flow data are not representative of the catchment. The respondent asserted that the flow data relied on by the appellant are misleading because they show an overlap of a small number of storm events with heavy rainfall and high flow conditions. The respondent accepts that the effluent discharge contribution to the downstream monitoring flow rate fluctuates greatly throughout the seasons, with greater contributions during summer months. The respondent contends however that it is incorrect to derive the percentage nitrogen mass contribution from the flow contribution without taking the nitrogen effluent discharge concentrations into account. The respondent estimates that the agricultural nitrogen mass loading contribution during the sample dates ranges between 12.2% and 95.2%. The respondent disputes that MP1673 is unduly influenced by point source discharge.

## 27. Findings and reasons

### *NVZ S513*

28. In our determination of appeal NVZ/2021/0004, having considered all evidence before us, we made the following findings in respect of MP1712, the failing monitoring point in S513:
- (i) The screening process to assess undue influence was not correctly undertaken.
  - (ii) MP1712 is subject to undue influence from point source discharges.
  - (iii) MP1712 is not representative of the catchment in which it is located.
29. On that basis we found that MP1712 ought to have been excluded and as it was the sole failing monitoring point on which the designation of S513 was based, we allowed the appeal. We rely on those findings here.

### *NVZ S508*

30. The designation of S508 was based solely on monitoring point E0001673 (MP1673). It was the only monitoring point in the NVZ in 2012 when it was first designated and although there are now others, it is the sole one on which the designation is based. The appellant has identified a number of issues relating to the exclusion of all monitoring points except MP1673.
31. The respondent excluded all monitoring points from the 2021 review despite the fact that they complied with the data requirements set out in the current NVZ surface water designation methodology. The respondent indicated that MP1690 and MP1692 were excluded because they only had five samples in the current six-year period. MP4690 and MP1669 were excluded because of their sample point type. This is despite neither reason being a valid reason for exclusion as contained in the current methodology. The relevance of the exclusion of the data from the 2021 assessment is that it is important to contextualise the wider catchment patterns of TIN concentration in surface water.
32. It is accepted that MP1669 is representative of the catchment, as it is located at the catchment outlet, and the location is a pass. The respondent justifies reliance on MP1673 on the basis that it is the worst performing monitoring point in the catchment. While it is correct to say that the catchment should be designated on the basis of the worst performing monitoring point, this is only valid where all monitoring points have been correctly considered against the monitoring point exclusion criteria.
33. The evidence shows that TIN concentration trends across the wider catchment differ to those recorded at MP1673. MP1673 exhibits a much greater range of, and consistently higher, TIN than elsewhere in the catchment, and peaks clearly occur in the summer. We explore this further below.
34. MP4690 is not affected by sewage treatment works inputs and is therefore representative of agricultural inputs for approximately 40% of the catchment, with TIN of 2.95 mg/L.
35. We find that there are flaws in the way the respondent approached the question of which monitoring points should have been included in the assessment. The focus of the evidence

remains on the sole monitoring point which led to the designation and therefore we address this in more detail.

*Was the screening process undertaken correctly?*

36. 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.
37. The respondent refers to the 2017 methodology, 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.
38. The screening test involves answering the following questions:

1. Does the monitoring location site lie immediately downstream of a consented effluent discharge?

Yes, the monitoring point is immediately downstream from an effluent discharge.

2. If yes, estimate the distance downstream from the effluent discharge.
3. The distance between the monitoring point and Tenterden Sewage Treatment Works (Tenterden STW) is not agreed. The respondent asserts that MP1673 is 340m downstream of Tenterden STW. We accept that this is the case based on Map C.
4. Is the monitoring location within the mixing zone of a point source discharge?

The monitoring point is not in the mixing zone of the point source discharge. We note that even if MP1673 is only 210m downstream of Tenterden STW as stated by the appellant, we find that it is still comfortably outside the mixing zone.

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

The likely dilution of effluent is contentious, with both parties relying on incomplete data. There is uncertainty over the actual flow measurements and a disagreement over methodology. The appellant suggests that this highlights the issue of insufficient monitoring in the catchment on which to base sound decisions. We agree. We also note that the respondent now disputes their own evidence relied on in their response to the 2014 appeal against designation of S508.

The Qube data relied on by the respondent in the second technical response indicate that it is typical for over 30% of flows in summer to be derived from Tenterden and Beneden STWs. If this represents approximately one third, then the remaining approximately two thirds of flow during the summer is derived from rainfall runoff and baseflow upstream of MP1673. This gives a dilution ratio of 1:2. Thus, the dilution ratio for several months of the year, i.e. summer and early autumn is typically 1:2 or less on the respondent's own evidence.

A significant number of the failing measurements are taken at times when the dilution ratio is 1:2 or worse and in these instances, over 80% of TIN is likely to originate from the STW. We agree with the appellant's contention that the figures are indicative of low dilution at low flow and that dilutions of less than 1:1 regularly occur and that this is a reasonable reflection of the general magnitude of processes occurring in the catchment.

We find that there is low dilution.

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

Ammonia levels are not cited as forming a significant portion of total TIN as N concentration at MP1673.

- 5b. Do peaks in concentration occur in the summer?

Yes, the longer time series (drawing D2) shows that nitrogen concentrations for MP1673 exhibit clear seasonal variations with peaks occurring almost exclusively in the summer and early autumn. This indicates that the more detailed data for 2009-2011 are representative of a pattern occurring over a longer timescale and is consistent with point source discharge being the dominant sources. Treated effluent discharges are likely to be consistent year round, but there is reduced dilution in summer months.

The respondent argues that failures (i.e. peaks in concentration) at MP1673 did not occur solely during periods of low flow in summer, but also when the natural flow of water was high. This is not relevant to the screening test. The relevant question is whether peaks do occur in summer, the answer to which for MP1673 is yes. For MP1673 this is in fact the great majority of peaks, with only isolated instances of winter peaks across a 30 year time series.

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

No. Land use modelling was only undertaken in one year (2008) and it showed a clear disparity between monitoring and modelled data. Monitoring showed a confident fail whereas modelling showed a confident pass.

7. Final selection of water bodies for local workshops and calculation of point source contribution.

This step simply determines whether the above screening test results in the necessity to take the monitoring point to exclusion testing.

39. We find that on the basis of the evidence before us MP1673 fails 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 correctly undertake the screening process to identify possible undue influence.
40. MP1692 does also appear to be impacted by the STW upstream of it. However, we note also that MP1692 has been removed from the monitoring by the Respondent for the 2021 review, and because this MP has never been relied upon in any designating or review round, no arguments around this monitoring point are central to the appeal.



41. We therefore move on to decide whether or not point source effluent does in fact unduly influence the failing monitoring point (MP1673) and therefore whether it should be excluded.

*Is monitoring point MP1673 unduly influenced?*

42. The exclusion criteria are as follows:

1. Is the site in a mixing zone?

No, the monitoring point is outside the mixing zone. This was not disputed by the appellant.

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 should be 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. Is the monitoring point located on a tributary or main stem?

The monitoring point is on the main stem. (NB the methodology states that the exclusion criteria to now be applied are from exclusion criterion number 6 onwards. Criteria 3, 4 and 5 relate to MPs on tributaries, and are reproduced below for the sake of completeness.)

3. If the monitoring site is on a tributary, are there other monitoring locations in the waterbody?

Not relevant as MP is on the main stem.

4. If yes, is the nitrate pollution localised?

Not relevant as MP is on the main stem.

5. Calculate percentage effluent contribution to TIN concentration at downstream tributary monitoring site using RQP or SIMCAT approach.

Not relevant as MP is on the main stem.

6. Examine results for other monitoring sites on main stem river immediately upstream and downstream of the failing monitoring site to determine if nitrate pollution is localized.

Yes, pollution is localised.

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

No evidence was provided to show that this step was undertaken, but arguably should have been given the answers to questions 1 to 6. The appellant calculates the contribution of effluent to TIN in the first response – we acknowledge that the respondent did not accept the appellant’s calculation.

The appellant asserts that the estimated loading (table 7, page 170 of the bundle) will underestimate the total loading because of the lack of data concerning emergency settled storm overflow, which is untreated effluent screened only for solids.

Table 8 at page 171 of the bundle calculates the proportions of flow derived from the sewage treatment works. The respondent also disputes this analysis. The appellant’s analysis provides a series of estimates at various Q values, which shows that only at a Q value of approximately 65 is the proportion of flow 1:1. In addition, it shows that dilution only exceeds 1:10 around 10% of the time. This is significant, because the 2012 methodology explains that sewage treatment works discharge may exceed 80% of TIN below this dilution.

The respondent questions the appellant’s methodology at page 170 of the bundle by calling into question the validity of the flow data from Newmill Channel gauging station on which the appellant relies. The respondent disputes that there is a correlation between Newmill Channel flows and sewage treatment works flows. The respondent also criticises their own flow data for Newmill Channel, stating that it is not representative of the catchment. Despite this, the respondent nevertheless relies on these data to disprove the correlation.

The respondent relies on figure 5, page 338 of the bundle to support the assertion that there is no correlation between the Newmill Channel and sewage treatment works flows. However, on considering this, we find that there is some correlation because none of the highest ranking sewage treatment works flows occur at a Newmill Channel flow below rank 500. This suggests that the highest sewage treatment works flows do in fact require higher catchment flows.

The respondent relies on Qube flow data in their first technical response, which is plotted by the appellant in the second technical response at figure D6, page 347 of the bundle). From this it is clear that there is some correlation between Newmill Channel and sewage treatment works flows. Accordingly, we find that the appellant’s approach to determining dilution (table 8) has some validity even if the precise numbers are not agreed.

So, while there is uncertainty over the actual flow measurements, the time series data as presented by the appellant in drawings D2, D3, and D6 (pages 176, 177 and 347 of the bundle) are compelling evidence for the control exerted by Tenterden STW on measured concentrations at MP1673, especially with regard to the pattern of TIN concentration observed across the year.

Based on the evidence before us, we find on the balance of probabilities, that as a high proportion of failing measurements at MP1673 are taken at times when dilution is at a ratio of 1:2 or worse, during which times more than 80% of TIN is likely to come from

a sewage treatment works. 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.

43. We find on the balance of probabilities that the evidence demonstrates MP1673 meets the criteria for exclusion.

*Are the failing monitoring points representative?*

44. The 2016 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 monitoring point is significantly different to other monitoring points in the catchment.

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

No. Monitoring at MP1673 was not consistent with land use modelling on the one occasion it was carried out. We acknowledge that there has been no land use modelling since then. The evidence relating to summer peaks at this monitoring point is consistent, with failures at this MP driven primarily by summer peaks when dilution ratios are at their lowest.

The monitoring points that pass the 95<sup>th</sup> %ile TIN criteria (E0001669, E0001690 and E0004690) all exhibit winter peaks and are considered representative of the catchment. This is especially so for E0001669 which is located on the main stem of the river at the catchment outlet, and thus amalgamates the entire TIN signal from the catchment above it. MP E0001669 is clear pass.

MP1692 appears to be impacted by the STW upstream of it.

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

No, based on the relevant maps, the catchment is not 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.

45. For the reasons set out above, we find on the balance of probabilities that MP1673 is not representative of the catchment.

46. It follows therefore that we allow the appeal.

47. Finally, the tribunal wishes to apologise to the parties for the length of time it has taken for this decision to be finalised.

Signed J K Swaney

Date 1 November 2023

Judge J K Swaney  
Judge of the First-tier Tribunal