Interim guidelines on small scale thresholds and nutrient neutrality principles for the Somerset Levels and Moors Ramsar catchment. V.1: 28/01/21

The following are interim guidelines agreed between Somerset Ecology Service and Natural England, in lieu of national guidelines

The extracts below cover information that may assist you in:

1. *Determining whether a project will have a likely significant effect (LSE), alone or in combination, including suggested thresholds and evidence for informing judgments (local evidence will also need to be considered)*
2. *Considering 'nutrient neutrality', by applying a number of suggested principles.*

1. Assessment of Likely Significant Effects and thresholds for insignificant effects

In our opinion, a conclusion of no LSE could be reached and therefore no AA would be necessary, where:

(a) there is clearly no connectivity or pathway between the plan or project and the sensitive designated site interest features, and therefore the nutrients cannot impact the site interest features, or

(b) there is a pathway, but either the plan or project will not increase nutrient levels or would reduce them from the existing situation, and maintaining the current or reduced nutrient levels would not undermine the objective of restoring the site to favourable conservation status, or

(c) there is a pathway but any additional nutrient contribution will clearly be insignificant alone and in-combination (see suggested thresholds below).

Thresholds for Insignificant Effects

Waddenzee established that an AA is required where there is a "probability or a risk" of a significant effect on the site concerned. In light of the precautionary principle, a plan or project is likely to have a significant effect if the risk cannot be excluded on the basis of objective evidence. Any site specific rationale or thresholds to demonstrate the insignificance of effects would need to ensure that the risk of LSE (alone or in combination) can be excluded. Where evidence is not currently available or it is uncertain, it would be more appropriate to take the plan or project through to AA for further consideration.

Natural England currently considers that it is difficult to make robust arguments around generic standardised thresholds for levels of water quality impacts that exclude the risk of likely significant effects (alone and in combination) for all sites and situations. There are a number of different factors that are variable between sites which can influence the risk of cumulative effects and the sensitivity and vulnerability of the site and therefore what might be significant.

Thresholds for insignificant levels of phosphorus discharges to ground

Natural England considers that there is an exception to this position on generic thresholds in relation to discharges of phosphorus to ground.

Summary of evidence

Septic tank systems or package treatment plants that discharge to ground via a drainage field should pose little threat to the environment, because much of the P discharged is removed from the effluent as it percolates through the soil in the drainage field. The risk of water pollution by these types of discharges to ground depends on a range of factors that affect their success or failure and can be summarised by three key factors:

1. improper location
2. poor design
3. incorrect management

Phosphorus is removed from the effluent within the drainage field through adsorption to soil particles within the aerated soil zone. How much phosphorus is removed within the aerated soil zone will depend on the soil type and the soil phosphorus characteristics. For the drainage field to work effectively the drainage field needs to have acceptable year round percolation rates which will be influenced by the soil type, as if they drain too quickly or to slowly effective phosphorus removal will not take place. In addition if infiltration rates are lower than the loading rate of the effluent into the drainage field then hydraulic failure can occur which results in the effluent being discharged over the soil surface. Therefore correct design of the system is important. The building regulations set out design and construction standards for septic tanks, package treatment plants and drainage fields. In relation to drainage fields they include the need for a percolation test, a method for how this should be undertaken and the minimum and maximum percolation values (Vp) which ensure that the drainage field effectively removes pollutants. This is then used to calculate the size of the drainage field required for the size of the household it will be serving.

As the evidence has shown that it is the aerated soil zone of the drainage field which provides the function in terms of removing the phosphorus from the effluent before it enters a receiving waterbody (surface or groundwater), any enhanced connectivity to a waterbody, which short circuits this process, is probably one of the main factors that causes pollution of SSSIs by these systems. Therefore it will be important that the drainage field is sited far enough away from any watercourse, ditch, drain etc as well as that it is not in a location where the groundwater is high enough that comes into connection with this aerated zone. In addition seasonal flooding can wash out the contents of the tanks. Slope also affects the way the drainage field functions, with steeper slopes having a higher risk of run off.

There is also some evidence that density (i.e. number) of these types of systems in an area also has a bearing on the risk of pollution. In general, lower densities of tanks tend to cause less contamination of downstream waterbodies than higher densities of tanks.

Proposed thresholds

Small discharges to ground i.e. less than 5m3/day that are within the surface or groundwater catchment of a designated site will present a low risk that the phosphorus will have a significant effect on the designated site where certain conditions are met:

a) The drainage field is more than 50m from the designated site boundary (or sensitive interest feature) **and**;

b) The drainage field is more than 40m from any surface water feature e.g. ditch, drain, watercourse **and**;

c) The drainage field in an area with a slope no greater than 15%, **and**;

d) The drainage field is in an area where the high water table groundwater depth is at least 2m below the surface at all times **and**;

e) The drainage field will not be subject to significant flooding, e.g. it is not in flood zone 2 or 3 **and**;

f) There are no other known factors which would expedite the transport of phosphorus for example fissured geology, known sewer flooding, conditions in the soil/geology that would cause remobilisation phosphorus, presence of mineshafts, etc **and**;

g) To ensure that there is no significant in combination effect, the septic tank should be at least 200m from any other septic tank. The density of septic tanks should also not be greater than 1 for every 4ha (or 25 per km2).

A GIS layer for the whole of England showing small sewage discharge risk zones can inform consideration of conditions b, c and d and is available on request from Natural England's GI data team datanaturalenglandgidatamanagers@naturalengland.org.uk . Where this layer indicates that there is a low risk, then the three conditions (b,c & d) above can be considered to be met. Where there is a high or medium risk identified, then one or more of the three conditions (b, c & d) will not be met. This GIS layer can be shared with the EA and Local Authorities with the relevant data licence via our GI team, but not with developers due to the terms in the data licence. If site specific monitoring/modelled data is presented for conditions b, c or d which provides greater certainty than the national dataset used to produce the risk map, then this can override the risk map. It may be time consuming and/or costly to undertake site-specific monitoring that provides sufficient certainty for some of the conditions such as groundwater depth, due to the inherent variability over time and therefore the need for any monitoring to cover a long enough time period (several years) and to a sufficient frequency to determine the highest groundwater depth. It is therefore acceptable to rely on modelled or national dataset where these are the best available data and sufficiently scientifically robust.

To consider the other three conditions (a, e and f) other data sources will need to be considered. Condition a, can be looked at through using the designated site data layer and calculating the distance from the site boundary. Condition e can use the EA flood risk maps (https://flood-map-for-planning.service.gov.uk/). Condition f should make use of any sewer flood data and information on local geology or other local information which it is readily available. It can be assumed that Phosphorus will not be remobilised unless there is existing evidence from investigations or known chemical conditions which suggest otherwise.

If conditions a to g are all met this represents a low risk that phosphate will reach the site, and not zero risk. There will be further processes of dilution and attenuation between the drainage field and the site, which will provide further reduction and the current evidence would suggest that the scale of any inputs from these sources would not be significant.

Where best available evidence indicates that these conditions are met, Natural England can advise that, in its view, a conclusion of no LSE alone and in combination for phosphorus can be reached in these circumstances. Where uncertainty remains so LSE cannot be ruled out or evidence exists that there is a risk of phosphate from small discharges to ground causing a significant effect to a designated site (e.g. from SAGIS modelling or monitoring investigations), then our advice should be that there is a LSE or LSE cannot be ruled out and an AA should be undertaken. Where evidence is presented which provides sufficient certainty that there will be no LSE even though the these condition are not met e.g. better local information, then we can advise no LSE. This will be determined on a case by case basis.

The competent authority, as the decision maker, will need to determine whether it agrees with NEs advice.

For developments which allow for increases in the number of people that will be served by an existing discharge to a drainage field, it will be important to consider whether the existing system has sufficient capacity in its design to accommodate the increase, without increasing the risk of pollution.

The evidence underpinning these thresholds will be periodically reviewed and the thresholds will be amended as necessary to take account of any new evidence.

This approach does not apply to nitrogen as it does not get taken up by the soil like phosphorus.

Further work is necessary to review the evidence and determine if it is possible to establish any other generic insignificance thresholds for other development or discharge types.

Site-specific thresholds for insignificant effects

It may be possible, particularly taking into account the site/catchment specifics in some cases to provide a site/development specific rationale or develop site specific thresholds for certain types of development. These should be based on evidence and where assumptions are used these should be well-founded. Any criteria or thresholds would need to take account of both alone and in combination effects.

If a rationale is put forward for ruling out a plan or project based on its insignificant effect, then it should ensure that all of the following factors have been taken into account:

- Sensitivity of the designated site features – Different interest features will have varying sensitivities to different water quality pollutants. The sensitivity of a site to a specific pollutant will be reflected by any water quality targets or ecological targets that are affected by water quality that are set for the designated site. These targets can be found in the conservation objective supplementary advice and are based on Common Standards Monitoring guidance (CSMG). Any rationale or thresholds should be based on its potential significance in relation to these targets and not to the current concentration or level within the site.
- Vulnerability of the site - Different habitats will have varying vulnerability to the accumulation of pollutants which will affect how significant any pollutant contribution is. Habitats with short residence times such as fast flowing rivers are less likely to accumulate pollutants than habitats that have long residence times, such as lakes. The same pollutant contribution therefore can have a greater impact on a site that has longer residence times, than on a site which has shorter residence times, as there is the potential for greater accumulation of the pollutant over time. Terrestrial wetland sites in particular are extremely vulnerable as they tend to store pollutants and the pollutant is not readily lost unless specific management is undertaken e.g. vegetation cutting and removal.
- Contribution from the plan or project – Both the volume and concentration of the discharge/run off will affect the contribution that the plan or project will have. In addition the contribution from the plan or project could be affected by the location of the input in relation to the European site/designated features (within or distance upstream) and therefore any potential for decay or loss before it reaches the European site. Also the dilution may affect the significance of the contribution in relation to concentration changes it may have, however it should be noted that dilution will not reduce the load contribution that the plan or project will have to the European site. The nature of the discharge, whether it is continuous or intermittent and the timing may also affect the potential impact that its contribution might have on the ecological interest features.
- Potential for cumulative effects and risk of proliferation - The potential future risk of proliferation of plans and projects will vary from site to site as development pressure is variable in different locations. This means that the potential risk of future cumulative effects (i.e. the number of new plans and projects that are likely to come forward in the future) will also vary. The scale of contribution which might be considered to be insignificant alone and in combination will be influenced by the scale of the potential cumulative effect. For example, a site in a very small catchment which is largely agricultural where there are very few plans or projects will have a lower risk of proliferation, and therefore the contribution that might be considered insignificant may be higher than a site in a large catchment with many plans or projects, which will have a higher risk of proliferation.

For some European sites, effects from specific types of development such as commercial development (e.g. offices, shops etc) have been considered insignificant on the basis that the people using these types of development, are likely to live in the catchment and therefore their contribution will either already be accounted for in the existing background or will be taken into account through a HRA for any new residential development. However this assumption should be considered on a case by case basis to ensure that it is appropriate to the circumstances of the European site, the development type and the location. For some sites or types/location of development it may not be reasonable to assume that the users will live in the same catchment and therefore there could still be an increase in the loading due to the commercial development.

For some European sites, such as river SACs, the spatial location of the contribution within the catchment is also important, so the fact that people might be living and working in the same catchment doesn't mean the contribution from these will be in the same location and therefore the specific spatial impacts from both need to be fully taken into account. It will be important that where a rationale or site specific threshold for insignificance is used for commercial development, the evidence and justification has been provided that this assumption is valid.

Further work is needed to determine if it is possible to establish any site specific criteria on an insignificance level based on the best available evidence.

2. **Nutrient Neutrality Principles**

Where a project or plan is judged to have a LSE, one way that an adverse effect on integrity of the protected site can be ruled out is where 'nutrient neutrality' can be demonstrated, i.e. where a nutrient budget shows that the introduction of certain mitigation measures means that there is no net increase in nutrients.

Any neutrality measures relied on in an AA should:

1. Have sufficient scientific certainty at the time of the AA that the measures will deliver the required reduction to make the plan or project 'neutral';

2. Have sufficient practical certainty at the time of the AA that the measures will be implemented and in place at the relevant time, e.g. secured and funded for the lifetime of the development's effects;

3. Be preventive in nature so as to avoid effects in the first place rather than offset or compensate for damage. Consideration will therefore need to be given as to (i) when the measures will come online and into effect and (ii) when the pollutants come online as the impact may be phased and

take place over the lifetime of a development, rather than on day one. It may be that a range of measures may be needed to address impacts over time;

4. Not undermine the objective of restoring the site to favourable conservation status by making the ‘restore’ objective appreciably more difficult or prejudicing the fulfilment of that objective. For example, where there is only a limited pool of measures available for addressing an existing exceeded threshold and these are used to enable growth rather than bring the site into favourable condition, this may undermine the ‘restore’ objective. The key question would be whether, in fact, there is actually a limited pool of measures in the relevant circumstances;

5. Not directly use or double count measures that are already in place or must be put in place to protect, conserve or restore the site (to meet article 6(1)(2) requirements) in order to justify new growth. For example, those measures that have been identified in a DWPP as needed to restore the site (such as wastewater treatment work upgrades that do not take account of growth) cannot also be used as mitigation for development;

6. Be carefully justified together with calculations of the change in the nutrient contribution before and after the development taking account of any mitigation on land outside the development. Over-estimating the existing nutrient contribution from development land or mitigation land outside the development site and/or under-estimating the nutrient contribution from the development to reduce the scale of nutrient reduction mitigation needed to meet ‘nutrient neutrality’ would not satisfy the precautionary requirements of the Habitats Regulations. The nutrient neutrality methodology for the Solent is an example of how calculations can be undertaken

(Solent Nutrient Neutrality methodology and calculator) - The Solent approach can be used as a starting point for other areas but must be adapted to apply to the specific local circumstances of the area;

7. Ensure that there is no real risk that the existing land use, which may be maintained by neutrality (or betterment), undermines the conservation objective to ‘restore’ the site to favourable conservation status. This applies to the existing land use at the development site and at any off-site mitigation land. See Annex 2 for further details.