

Advice Note – Considering Package Treatment Plants and Septic Tanks as part of nutrients mitigation in Somerset.

At the request of Somerset West and Taunton Council, Natural England and the Environment Agency have developed this advice note. The note is endorsed by *[insert name of local planning authority or authorities]*.

The purpose of the note is to provide applicants with information that can:

- Support applicants considering their options regarding Package Treatment Plants (PTP), where that may be a viable option for achieving 'nutrient neutrality' for development proposals hydrologically linked to the Somerset Levels and Moors Ramsar Site.
- Support applicants in submitting information needed to determine a planning application involving a PTP.

It is important to remember, new development must connect to a public foul sewer rather than use a PTP where it is reasonable to do so.

This note covers potential nutrient mitigation options that relate to private foul drainage systems, in particular:

- 1) General principles on use of PTPs and provision of new wastewater treatment plants.
- 2) Replacing existing inefficient septic tanks and PTPs with improved PTPs.
- 3) Provision of new wastewater treatment facilities managed by an OFWAT-appointed statutory sewage undertaker.
- 4) Replacing existing private foul drainage with a connection to a public foul sewer
- 5) A flow chart to support applicants and decision-makers in applying advice contained in this note

The note provides advice on specific solutions that may be appropriate in some cases, but applicants are advised to consider all mitigation options available to them.

1) General principles on use of Package Treatment Plants and provision of new wastewater treatment plants

Where it is appropriate to use a PTP it will not in itself achieve nutrient neutrality, unless:

- it is replacing an existing inefficient septic tank or PTP (see section 2); or
 - it meets agreed thresholds for small-scale discharges (see below).
- In other cases a PTP that is proposed as part of a planning application will need to be delivered in conjunction with other mitigation measures to achieve nutrient neutrality.

National Planning Policy on use of PTPs and Septic Tanks

Planning Practice Guidance (Water supply, wastewater and water quality para 20) and the EA have a presumption against private sewage treatment works in sewered areas and will always seek connection to the mains sewer where possible and practicable. The use of small scale PTPs for new residential development is therefore normally only accepted by EA where there is no option for using the mains sewerage, or where the new facility will be managed by an OFWAT-appointed statutory sewerage undertaker (see section 3).

Local guidance on small-scale thresholds

The discharge of PTPs to ground in areas hydrologically connected to the Somerset Levels and Moors Ramsar Site which meet the necessary criteria may benefit from the agreed thresholds for small scale discharges, and therefore be screened out from Habitats Regulations Assessment. Further information may be found at:

https://www.southsomerset.gov.uk/media/4503/interim-guidelines-on-small-scale-thresholds-and-nutrient-neutrality-principles_may-2021.pdf

Considering PTP types and implications for maintenance and planning controls

Some modern replacement PTPs use chemical dosing to achieve further nutrient reduction. However, while chemical dosing systems have been deployed widely in some countries they are still relatively novel in England. This means that, particularly in catchments of Habitats Sites affected by poor water quality, the approach taken by regulatory bodies is precautionary at this stage and reflects two key issues:

1) Chemicals used

Where chemical dosing is a viable option and a means of securing long term maintenance has been agreed with a LPA, it is advised systems using ferric rather than aluminium salts are used. Some forms of aluminium can be highly toxic, particularly to some freshwater species. Natural England's advice is that the use of aluminium should be avoided, particularly within the catchment of a Habitats Site, as it is not currently possible with any certainty to determine what levels would avoid adverse environmental impacts, making it difficult to conclude through an Appropriate Assessment that there would be no harm to the Somerset Levels and Moors Ramsar site.

2) Securing maintenance and monitoring, in perpetuity

When authorising a development that has been subject to an Appropriate Assessment under the Habitats Directive, the LPA, as the Competent Authority must be satisfied that mitigation measures will be effective and deliverable for the lifetime of the development. Chemical dosing brings into focus potential risks to the environment and to the efficacy of the PTP that could arise through inadequate maintenance and monitoring of the dosing, or inappropriate storage of chemicals on-site. Ongoing maintenance and monitoring requires specialist support to ensure that the amount and frequency of dosing is properly managed. It may be possible for an applicant to put in place a service agreement with an approved or specialist management company, and for the LPA to secure it, along with validation and enforcement arrangements, through a S106 or Unilateral

Undertaking (UU). However, experience in securing these arrangements is currently limited and costs may prove to be prohibitive.

LPA's may see risks as being lessened where there is deemed to be greater long-term security as to long term maintenance and liabilities, for example, due to the scale or nature of the development project.

Given the issues described above, applicants are advised to carefully consider whether a PTP using chemical dosing is a) necessary to achieve nutrient neutrality at your site and b) a viable option in terms of securing long term maintenance and monitoring with the LPA, at the outset.

It should also be borne in mind that there is evidence that biological / non-chemical systems are narrowing the gap in terms of performance.

When considering planning controls, LPA's will likely wish to avoid duplication with EA permit requirements where 'General Binding Rules' apply. In such cases and where risks are generally lower (e.g. non-chemical dosing systems) it is more likely that a planning condition rather than a legal agreement will provide sufficient certainty, but discussion with the LPA is recommended.

Lifetime of PTPs

A further consideration for all PTP types that will need consideration is the need to replace a PTP at the end of its operational lifetime, which will almost certainly be shorter than the lifetime of the development. Replacements should bring an improvement in performance but should be at least like for like. Again, whether the need for a future information requirement to be met or application to be submitted can be covered by a condition or needs a legal agreement is a matter for the LPA.

EA permit requirements

New Wastewater Treatment Plants, PTP and Septic Tank schemes will need to meet the EA permit requirements. Further information is available at: <https://www.gov.uk/guidance/discharges-to-surface-water-and-groundwater-environmental-permits>

2) Replacing existing inefficient septic tanks and Package Treatment Plants (PTPs) with improved PTPs.

- Nutrient credits may be generated by upgrading existing PTP and septic tank units. For example, an applicant proposing new houses might be able to replace septic tanks at existing neighbouring properties, or elsewhere provided the replaced units are appropriately located (see general principles in section 1). Failing systems should not be able to claim nutrient credits beyond the default baseline for expected performance, i.e. poorly performing systems should not be rewarded.

- PTPs or septic tanks that discharge to ground should only be replaced by units that also discharge to ground, where ground conditions are appropriate for drainage. Existing units that currently discharge to water may be replaced by units that discharge to either directly to water, or to ground.
- All PTP and septic tank replacement schemes will need to meet the EA permit requirements. The vast majority of these discharges will be operating under the General Binding Rules, but some may need an Environmental Permit from the EA. Further information is available at:

<https://www.gov.uk/permits-you-need-for-septic-tanks/you-have-a-septic-tank-or-small-sewage-treatment-plant>

- NB The replacement of existing units that discharge to ground in areas hydrologically connected to the Somerset Levels and Moors Ramsar Site, which meet the thresholds for small scale discharges (and are therefore screened out from Habitats Regulations Assessment) may not be used to generate phosphorus credits. Further information on the small-scale thresholds may be found at:

https://www.southsomerset.gov.uk/media/4503/interim-guidelines-on-small-scale-thresholds-and-nutrient-neutrality-principles_may-2021.pdf

- All septic tanks and PTPs undergo independent third party testing that they meet British Standards (BS EN 12566) and the certification sets out the mean concentration of the effluent from that system. Not all will have been tested for Total Nitrogen (TN) or Total Phosphorus (TP) as this is not a mandatory requirement of the British Standard, but where the certificate (or test results from the independent test if it was undertaken but not included on the certificate) can be provided, this is sufficient evidence of the concentrations that the effluent will achieve. In these circumstances there is no need to request any further monitoring evidence. British Water have compiled a list of some (although not all) of the smaller existing septic tanks / PTPs on the market and their test certificates which can be accessed here: [List of Certified Small Wastewater Treatment Systems Up to 50PT \(britishwater.co.uk\)](#). For any systems not on this list, if a certificate or third party independent testing results can be provided, these can also be relied upon if these are from an accredited third party independent testing facility and to British Standards. A list of the independent testing facilities which test to British Standards can be found here: [EUROPA - European Commission - Growth - Regulatory policy - NANDO](#).
- Where there is no relevant TP/TN effluent concentration on a valid test certificate or test results from a third party test facility to British Standards, or the type of system is not known then the load of the septic tank / PTP should be calculated using the default mean concentration values below:

Phosphorus

Septic tank = 11.6 mg/l (O'Keeffe et al 2015).

PTP = 9.7 mg/l (May and Woods 2016)

- Monitoring of the nutrient levels in the effluent from the PTP / septic tank to be replaced provides an alternative approach, however, to be accepted such monitoring should cover at least 8 months of typical operation.
- The total nutrient loads expected from the existing facility can then be calculated using the standard calculators using the average water per person water consumption for the existing properties. This may be derived from reasonable meter readings where available, or based on the average water consumption for the property type.

3) Provision of new wastewater treatment facilities managed by an OFWAT-appointed statutory sewage undertaker.

- In both sewered and unsewered areas developments may be able to provide their own wastewater treatment facilities that operate at higher efficiency than the main Wastewater Treatment Works (WWTWs), provided that the facility is adopted and managed by an OFWAT-appointed statutory sewerage undertaker, or managed by a Local Authority-assured competent operator.
- The permit limit for such facilities will need to be agreed with the EA and used in the standard methodology for calculating phosphorus loads from WWTWs.

4) Replacing existing private foul drainage (PTPs and septic tanks) with a new connection to a public foul sewer.

- First time sewerage schemes that replace existing PTPs / Septic Tanks can reduce phosphorus loads to the environment and thereby generate nutrient credits for new development.
- The phosphorus budget for such schemes should be calculated using the methodology set out above for the existing PTPs / Septic Tanks to be replaced by the sewer connection and the standard phosphorus budget calculator for the additional load that would require treatment by the WWTW.

Note on proposals for PTP connections to a public foul sewer

- Proposals for discharging PTPs to the public sewer have been proposed as a means of achieving nutrient neutrality. Although the PTP would mean cleaner water would reach the WWTW, there will still be an increase in flow, therefore this does not necessarily mean that it would reduce the total phosphorus load discharged from the WWTW. Whether there would be a reduction and the scale of the reduction is extremely hard to determine with any certainty due to the complexity of factors which could influence this which would be case specific and could vary over time. For example, it will depend on the removal rate for nutrients within the package treatment plant, the proportion of flows that the property/ies contribute to the total flow, the

nutrient load arriving at the receiving WWTW, type of treatment processes in place at that WWTW and the effect that different influent characteristics will have on the efficacy of the treatment process. Therefore, it is not possible to determine with any certainty whether there would be a reduction in load or if there was what reduction would be achieved for the lifetime of the development. This is the case whether the WWTW has a concentration permit limit or not, but in addition where the WWTW has a concentration permit limit then there is no guarantee that the WWTW process won't just be optimised for efficiency (i.e. it doesn't have to remove so much) to remain within the permit limit but with increased flows.

- Due to the uncertainties in demonstrating that phosphorus neutrality will be achieved in perpetuity Natural England does not accept this approach for achieving nutrient neutrality within Appropriate Assessments.
- Although an EA permit would not be required for a PTP which discharges to the mains rather than to the environment the EA do not encourage the discharge of PTP systems to discharge to a public foul sewer. The EAs main concern being that it didn't ultimately lead to a proposal for a discharge to the environment rather than connection to public foul sewer. Such schemes would also need to be agreed between the operator and the sewage undertaker.

5) Flow chart to support the application of advice in this note – see below

Flow chart to support the application of advice in this note

