

DWMP 28



# Our Drainage and Wastewater Management Plan 2030-2055

Delivering for customers, communities and the environment

Performance Indicator Methodology – Treatment Works Compliance (numeric)

March 2026





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This methodology document is a working draft based on the requirements of the published DWMP guidance and informed by agreements made through the Water Industry Task and Finish Groups for each Performance Indicator (PI). As the DWMP stages for each PI progress, this methodology will be refined to reflect the practicalities of deployment and feedback from stakeholders. A final published methodology document will describe the detailed approach followed.

## 1. Introduction

- 1.1. This document provides a detailed description of the **Treatment Works Compliance (Numeric) Performance Indicator** and its purpose and contribution to forming our Drainage and Wastewater Management Plan (DWMP).

### Purpose of this document

- 1.2. The purpose of this document is to outline the methodology that will be used to establish the base year and future baseline forecasts for the **Treatment Works Compliance (Numeric) Performance Indicator**, as part of our DWMP for the 2030-2055 planning period. The base year is 2030 and it is our best estimate of expected performance for this indicator at the end of the current investment period (2025-2030) and reflects the outcome of schemes and maintenance activities planned for this period. We then forecast what is expected to happen to the indicator at baseline points in the future if no change in investment is made. These future points are set in the short term (2035), the medium term (2045) and the long term (2055).
- 1.3. In addition, it sets out threshold values that will be used to summarise the level of risk and guide the development of options for the 2030-2055 planning period.
- 1.4. The requirements for Performance Indicators are set out in Government guidance for DWMPs<sup>1</sup> and subsequent clarifications by the Environment Agency (EA)<sup>2</sup>. To understand the general approach to our DWMP please also refer to our Strategic Context document on our website<sup>3</sup>.
- 1.5. Assessment of the base year and future risks for each of our Performance Indicators is an important step in the development of our DWMP. It informs our understanding of how the drainage and wastewater system is able to meet legal obligations and meet the needs of customers and the environment. The DWMP approach requires completion of a risk assessment for the following Performance Indicators for each future planning horizon at the wastewater catchment scale:
- Internal flooding
  - External (curtilage) flooding
  - Storm overflow performance (England)<sup>§</sup>

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<sup>1</sup> [www.gov.uk/government/publications/guidelines-for-statutory-drainage-and-wastewater-management-plans-dwmps](http://www.gov.uk/government/publications/guidelines-for-statutory-drainage-and-wastewater-management-plans-dwmps)

<sup>2</sup> EA letters to water companies with feedback on performance indicators (02/10/2025), (23/03/2026) and reporting thresholds (17/10/2025).

<sup>3</sup> Select DWMP28 here [www.thameswater.co.uk/about-us/regulation/drainage-and-wastewater-management](http://www.thameswater.co.uk/about-us/regulation/drainage-and-wastewater-management)



## Treatment Works Compliance (Numeric) Methodology

- **Treatment works compliance (numeric)<sup>§</sup>**
- Treatment works compliance (descriptive at numeric sites)<sup>§</sup>
- Treatment works compliance (Dry Weather Flow (DWF))
- Treatment works compliance (Flow to Full Treatment (FFT))
- Good Ecological and/or Chemical status: Public sewerage
- Pollution incidents: serious<sup>§</sup>
- Pollution incidents: total
- Bathing water quality
- Shellfish water quality
- Surface water flooding (Shared responsibility)<sup>β</sup>
- Good Ecological and/or Chemical Status: Urban and transport (Shared responsibility)<sup>β</sup>
- Emergency overflow performance<sup>§β</sup>
- Treatment Works Compliance (descriptive)<sup>β</sup>
- Groundwater pollution<sup>β</sup>
- Groundwater infiltration<sup>β</sup>

1.6. Performance Indicators marked \$ will use a nationally consistent suite of thresholds to describe the general level of risk<sup>1,2</sup>. Performance Indicators marked β are considered more experimental in nature and are recognised as inherently difficult to forecast and will hence be trialled in DWMP28 as emerging Performance Indicators and then possibly refined for subsequent DWMPs<sup>1</sup>.

### Key definitions

1.7. **Treatment works compliance (numeric) Performance Indicator.** The Government DWMP guidelines provide the following definition:

Table 1 Extract from Table 2 of Defra guidance

Category	Metric	Details
Water environment	Treatment works compliance (numeric)	Annual number of wastewater treatment works predicted to fail numeric effluent quality permit limits.

1.8. A compliance failure aligns to the current definition as set out in the Environmental Performance Assessment (EPA) guidance<sup>4</sup> and covers treatment works compliance at wastewater assets only.

1.9. The Environment Agency (EA) is responsible for setting numeric discharge quality limits in permits. These limits are designed to protect surface and groundwater by controlling the concentration of effluent discharged from sewage treatment works. Therefore, final effluent from sewage treatment works is sampled a pre-set number of times annually based on the size of the works as agreed with the EA to assess compliance.

<sup>4</sup> [Water and sewerage companies: EPA methodology for 2026 to 2030 - GOV.UK](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/672222/water-and-sewerage-companies-eпа-methodology-for-2026-to-2030.pdf)



## Treatment Works Compliance (Numeric) Methodology

- 1.10. The permits specify how and when samples must be collected to monitor compliance with numeric limits. The EA sets permit limits based on the population equivalent served by the sewage treatment works, environmental conditions and sensitivity of the receiving water body. Numeric limits are set for parameters such as phosphorous, Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), ammoniacal nitrogen (expressed as N), or Total Suspended Solids (TSS). Some sites are also required to meet metal/chemical permit limits or have Ultraviolet (UV) treatment before discharge to the watercourse.
- 1.11. Numeric permits are generally set in the form of a percentile standard, the percentage of time that actual effluent can exceed the standard and still be considered compliant with the permit. This is used to interpret the number of individual samples per year that could fail the standard before the permit is considered not to be met. Typically, numeric quality samples must be within the permit limit for 95% of the time. These are known as LUT (look-up table) limits.
- 1.12. In addition to LUT limits many permits also contain UT (Upper Tier) or 'absolute' limits. If any sample exceeds this limit the site is deemed to have failed for the year.



## 2. Key assumptions

2.1. This section contains a description of the assumptions we will make in reporting the Performance Indicator and provides a commentary on alignment with the DWMP guidelines.

### Assumptions

- 342 Thames Water STW have numeric final effluent quality discharge permits. For this assessment, only STWs with numeric permits will be considered.
- Current discharge permits for an STW's treated effluent can be found in Thames Water's Environmental Management System (EMS), detailing the numeric limits for each of the determinands that compliance is assessed for.
- Some STW have enhancement investment included in our AMP8 investment plan to meet new or tightened permit limits as part of the WINEP (Water Industry National Environment Programme). We will assume delivery of schemes in line with our AMP8 delivery plan, as well as any new permit levels due at this time. Therefore, base year and future baseline compliance is assessed against the numeric permit (known or anticipated) in 2030.

### Alignment with Government DWMP guidelines

2.2. Our assessment methods, risk thresholds and our approach to reporting performance aligns with Government DWMP guidance and is consistent with the recently published revision to the Environment Agency's Environmental Performance Assessment (EPA) guidelines<sup>4</sup> and subsequent regulator correspondence<sup>2</sup>.

### 3. Data sources

3.1. This section includes a brief description of the key datasets required to generate and report on this Performance Indicator. We also outline the process of assuring the accuracy of the sources used to calculate the Performance Indicator.

**Table 2. Data sources and assurance**

Dataset	Source	Assurance
Current numeric permits level	Thames Water Permit Database. The permit level is described for each STW.	Subject to second line assurance within Thames Water
AMP8 numeric permits level	Water Industry National Environment Programme (WINEP) database	Issued to Thames Water by EA
Current compliance assessment	Operator Self-Monitoring (OSM) sampling programme which feeds annual Environment Agency Environmental Performance Assessment (EPA).	Subject to third line independent assurance
Population served by our STW	<p>The current and forecast future population equivalent is described for each STW and input to our SOLAR (Strategic Overview of Long-term Assets and Resources) system. SOLAR includes the following sources of population/PE data:</p> <ul style="list-style-type: none"> <li>•Existing residential population – Ordnance Survey address points multiplied the average household size as reported in the 2021 census.</li> <li>•Future housing development – Provided by Edge Analytics</li> <li>•Hidden and Transient population e.g. short-term residents, irregular migrants – Provided by Edge Analytics</li> <li>•Cess PE – Taken from annual return</li> <li>•Trade Effluent PE – Taken from annual return</li> </ul>	Subject to second line assurance within Thames Water

## 4. Reporting thresholds and outputs

4.1. This section includes a detailed description of:

- The reporting thresholds used to categorise the base and year baseline performance risk across our short-, medium- and long-term time planning horizons, and
- The outputs that will be reported.

### Reporting thresholds and planning horizons

4.2. The calculation for percentage compliance is based on the latest EA Environmental Performance Assessment (EPA)<sup>4</sup>:

$$\% \text{ compliance} = (B-A) / B \times 100$$

Where: A is the number of permits confirmed as failing in the calendar year, B is the number of permits on the Environment Agency register during the calendar year with active numeric limits

4.3. Reporting thresholds for this Performance Indicator are consistent with the latest EA EPA<sup>4</sup> methodology and subsequent EA correspondence<sup>2</sup>. The thresholds are used to summarise the forecast compliance with numeric permits across the whole of Thames Water. The STW is considered not compliant with its numeric permit as soon as the level for a single determinand is exceeded. These are:

- Where less than 98% of STWs meet this permit condition the overall situation is described as high risk. (2 - Red)
- Where between 98 and 99% of STWs meet this permit condition the overall situation is described as medium risk. (1 - Amber)
- Where greater than 99% of STWs meet this permit condition the overall situation is described as low risk (0 - Green)

### Reporting outputs

4.4. The main reporting outputs for this Performance Indicator will be GIS layers for the Thames Water DWMP portal showing the forecast treatment works compliance (numeric) risk level (high, medium, low) for the base year (2030) and the future baseline points (the planning horizon 2035, 2045 and 2055).

4.5. In addition, data tables will be produced that summarise performance for each STW from 2030 to 2055.



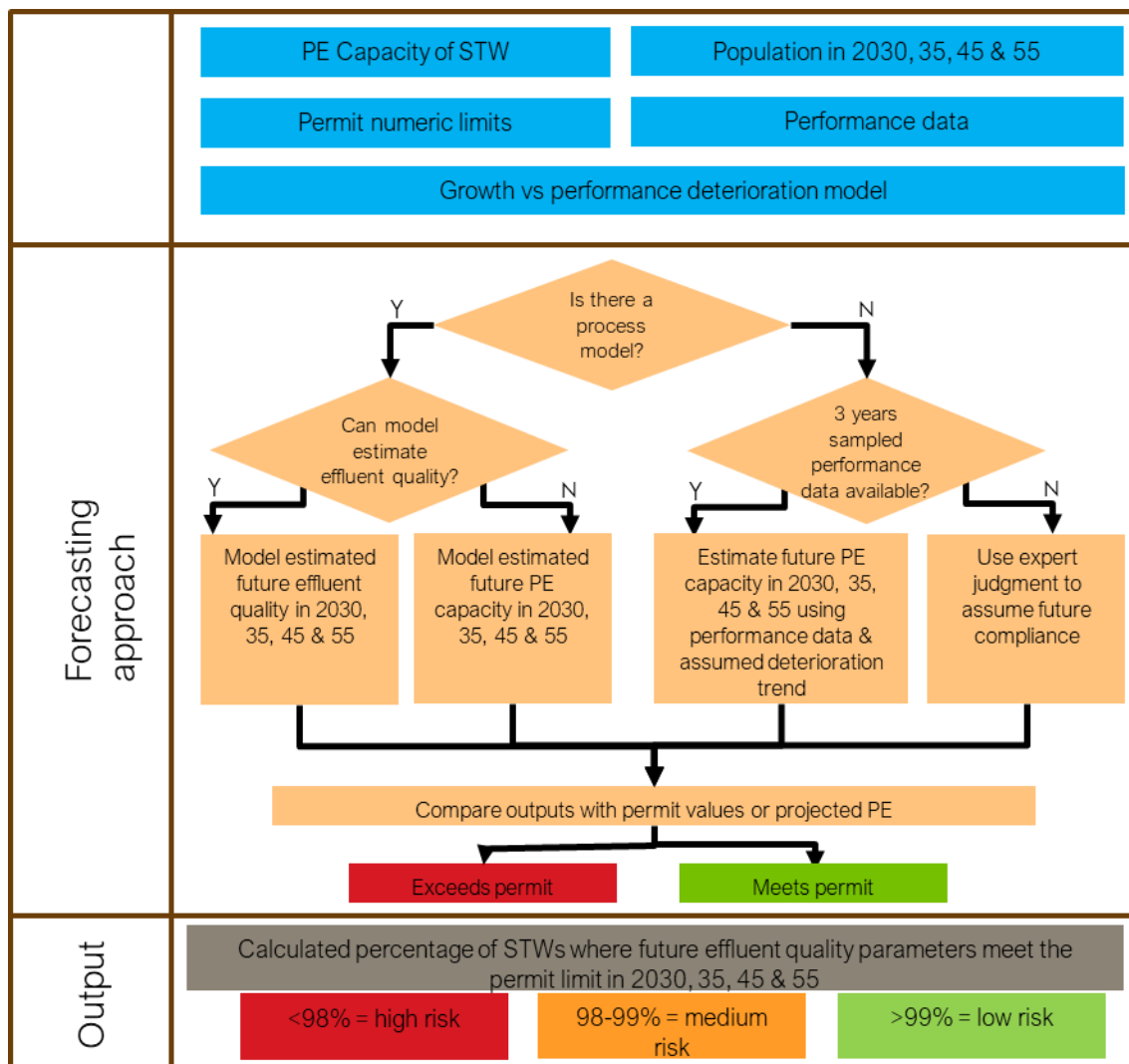
Assessing the value of performance

4.6. Alongside publication of this Performance Indicator methodology, there is a requirement to value performance outcomes using our Value Framework. This step will be completed during the Options Development and Appraisal (ODA) stage, once the framework has been fully defined and agreed following consultation with stakeholders.

5. Performance Indicator methodology

5.1. The following methodology will be applied to forecast base year and future baseline numeric permit compliance risk. The approach is illustrated in Figure 1.

Figure 1. Performance Indicator methodology



### Base year performance – 2030

- 5.2. We first assess the potential impact of any changes to the delivery of WINEP schemes in AMP8. The WINEP programme includes schemes to increase or intensify treatment capacity to allow our sites to meet new environmental permit limits. These permit limits will come into effect despite a scheme being delivered. We will therefore assume that any site with a new permit limit, but the associated upgrade has been delayed will be a failed site until the scheme is delivered.
- 5.3. We then assess the future population (and hence flows and loads) for the STW in 2030. This method is consistent with the method used to assess compliance with DWF and FFT permit levels for other STW permit Performance Indicators.
- 5.4. The approach taken subsequently depends on the availability and nature of a biological process model of the STW. Where such a model is available it can be used to either establish a future population equivalent (PE) at which the current permit would be failed (PE capacity method); or it can be used to dynamically model future flows and loads to generate a time-series of effluent concentrations that can be analysed for compliance with permit levels (in-detail process model method). Using either method, the likelihood of the existing STW infrastructure being able to meet the numeric permit can be evaluated.
- 5.5. Where no biological process model is available, the most recent three years of effluent sampling and permit compliance data is examined to produce a base performance against the sites permit. The percentage PE growth to the future horizon is calculated and performance is deteriorated based on a set of assumptions developed from existing models. For example, if the PE treated by an STW increases by 10% we would expect a 17% increase in ammonia concentration in the final effluent at percolating filter sites. If the site utilises the activated sludge process for biological treatment, we expect the increase in ammonia to be between 37% and 49%, depending on the configuration.

### Future baseline performance – 2035-2055

- 5.6. Future baseline numeric permit compliance will be established for 2035, 2045 and 2055 using the same methodologies.
- 5.7. Where there is a range due to uncertainty in the forecastable future input data for the Performance Indicator, then a scenario planning approach will be adopted here and throughout the DWMP. This is to inform our understanding of the sensitivity of our forecasts to uncertainty in input parameters and ultimately support the development of an adaptive pathway to dealing with the risk.
- 5.8. For 2030, 2035 and 2045 a central estimate for our input parameters is adopted as being the most likely future condition (Scenarios A and B in Table 3). For 2055 a more conservative estimate is made (scenario C) so that the 'worse case' outcome can be forecast.

Table 3. Scenario planning approach

Scenario	Description	Likely occurrence within	Low estimate	Central estimate (most plausible)	High estimate (conservative)
A	5-year Medium – most plausible for short-term planning	Approximately 5 years (2030 Planning Year)	Not Applicable	✓	Not Applicable
B	Core scenario – high likelihood for long-term planning.	10 to 20 years (2035, 2045 Planning Year)	Not Applicable	✓	Not Applicable
C	25-year High – conservative for long-term planning	Greater than 25 years (2055 Planning Year)	Not Applicable	Not Applicable	✓

## Assessment

- 5.9. Using the methods outlined above, the status of each STW at each period will be evaluated. It will be either compliant or non-compliant with its numeric permit.
- 5.10. Current performance (for 2025) will also be reported, showing where there are investments underway to correct any non-compliance for 2030. The percentage of all STWs passing/failing their permits at each planning period is then evaluated and reported.

## Base and Asset Health

- 5.11. We will also consider the risk of poor and deteriorating asset health affecting descriptive permit compliance. Thames Water is evaluating the asset health of all STW by calculating the annual likelihood of failure of key equipment types at STWs and using the change in this and the equipment/site criticality, to elicit a risk of non-compliance with permits at individual STWs. This will be reported at all three DWMP spatial scales (L3, L2 and L1)<sup>3</sup>.

## 6. Next steps

- 6.1. We will develop and refine our asset health index and forecasting assessment for STWs.



We welcome your views on this technical methodology. Please share them with us by emailing [DWMP@thameswater.co.uk](mailto:DWMP@thameswater.co.uk).



Our Drainage and Wastewater Management Plan 2030–2055 will include a number of technical methodologies, like this one. They will all provide detailed information on specific topics featured in our draft Plan such as climate change and sustainable approaches to drainage. You will be able to access all of the technical methodologies on our DWMP webpage.



For more DWMP28 information please visit our DWMP webpage and portals on our website.

