

A framework for the production of
Drainage and Wastewater Management Plans

Appendix B Risk-based catchment screening

Commissioned by Water UK in collaboration with Defra,
Welsh Government, Ofwat, Environment Agency, Natural
Resources Wales, Consumer Council for Water, ADEPT
and Blueprint for Water

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B.1. Introduction

This appendix supplements the information provided within the main framework document for drainage and wastewater management plans (DWMPs). The main document (and appendices) aim to provide water and sewerage companies (hereinafter referred to as 'companies' or variations thereof), operating within England and Wales, with a framework within which DWMPs can be developed. The DWMP framework is also expected to be of relevance to other parts of the UK.

In defining the DWMP framework, the following planning areas have been defined:

- > **Level 3 (L3) tactical planning unit (TPU)** – the basic TPU will be the wastewater treatment works (WwTW) and its catchment (or aggregations thereof for small catchments, or discrete sub-catchments for larger WwTW catchments).
- > **Level 2 (L2) strategic planning areas (SPAs)** – an aggregation of L3 units into larger L2 SPAs.
- > **Level 1 (L1) water company DWMP** – planning at L2 and L3 to be brought together within an overarching company level DWMP to provide a strategic, long-term plan for drainage and wastewater resilience and associated investment over the plan period.

For consistency the same terminology as used in the main report will be applied here.

A risk-based approach to DWMP requirements has been developed. All L3 planning areas are to be subjected to a high-level risk-based review to determine if more detailed supply/demand assessments are required. The approach involves a high-level assessment of each L3 catchment against a range of indicators; the information required should be readily available from company reporting systems or from other relevant stakeholders. This step is considered a pragmatic and proportionate approach to focus DWMP assessments; the approach

mirrors that for water resource management plans (WRMPs) where in general the process focusses detailed assessments within those water resource zones for which there is an identified need.

B.2. Screening criteria

Table B-1 outlines the indicators to be used in the assessment and the risk-based screening criteria to be applied to all L3 catchments.

B.2.1. Additional indicators and risk-based screening criteria

Companies have the flexibility to include additional indicators and risk-based screening criteria which either reflect specific company or customer priorities, and which can be strategically applied across all L3 catchments. It can be expected that partners and other stakeholders may propose bespoke metrics during L2 engagement, for collective endorsement. Companies should provide an explanation in the DWMP documentation that defines the measure and the reason for its inclusion in the screening process. However, companies are encouraged to share proposals for bespoke indicators, aiming for consistency/commonality of approach where possible, where similar indicators are proposed.

Additional indicators could include:

- > Odour – with a view to minimising customer complaints;
- > High infiltration – with a view to managing capacity constraints through infiltration reduction where appropriate;
- > Flow to full treatment compliance;
- > Further designations for continuous / intermittent discharge locations (e.g. discharges to water bodies not managed by Natural Resources Wales / Environment Agency or local authorities).

The Environment Agency's Environmental Performance Assessment (EPA) methodology¹ currently does not include pollution incidents from formerly private pumping stations or rising mains that were transferred/adopted in October 2016. The methodology advises that incidents from these assets 'will be included in the next review in 2020 for applying to 2021 data and beyond'. This will need to be accounted for in the risk-based catchment screening once the EPA methodology is reviewed and updated.

Companies that consider there is a need to assess pollution incident risk arising from these assets, ahead of the EPA update, are encouraged to develop a bespoke indicator.

¹ https://www.ofwat.gov.uk/wp-content/uploads/2017/12/WatCoPerfEPAmethodology_v3-Nov-2017-Final.pdf

B.2.1.1. Definition of population equivalent

Numerous indicators within the risk-based screening criteria refer to the population equivalent (PE) of wastewater flows arising from a catchment. The interpretation and definition of PE is set out in the Urban Waste Water Treatment Regulations². The population equivalent is a measurement of organic biodegradable load. A population equivalent of 1 (1 PE) is the organic biodegradable load having a five-day biochemical oxygen demand (BOD5) of 60g of oxygen per day (the load shall be calculated on the basis of the maximum average weekly load entering the treatment plant during the year, excluding unusual situations such as those due to heavy rain). From an Annual Performance Report perspective (Regulatory Accounting Guideline 4.07), this will align to amalgamation of reporting lines Table 4S Line 16 (PE excluding non-resident) plus Table 4U Line 12 (non-resident), to give a total population.

B.2.1.2. Assessing the impact of planned residential new development

When assessing the impact of planned residential new development, it is acknowledged that a relatively small increase in overall population equivalent at a catchment level could have a significant localised impact (dependent on the distribution of the new development across the catchment). However, to stipulate identification of such instances at this stage is considered overly-prescriptive, introducing a level of assessment not consistent with the principle of the process step, i.e. use of readily available information to decide whether more detailed supply/demand assessments are warranted. Companies can construct bespoke indicators to capture such occurrences, if is considered that they are not being addressed within current tactical plans. Confidence will be needed in the spatial distribution associated with the new development forecast.

B.2.1.3. Planned non-residential new development

Planned non-residential new development is not included as an indicator. There is often a high degree of uncertainty associated with such development forecasts. Companies are expected to include planned non-residential new development as a bespoke indicator, where the level of certainty is similar to that for the residential new development forecast. Companies should also consider undertaking sensitivity testing where a step change in development is proposed, even though there may be a high degree of uncertainty in the forecast.

² <https://www.legislation.gov.uk/uksi/1994/2841/regulation/2/made>

Table B-1 – Risk-based catchment screening indicators and process

Screening approach to be applied at L3 (or lower, to individual catchments, where tactical planning units have been created by grouping small catchments), as the objective is to highlight those catchments that require further detailed assessment.

Companies will need to state within DWMP documentation the base year against which all assessments are made.

| Indicator | Measure | Description | Proceed to DWMP Baseline Risk and Vulnerability Assessment? | | |
|--|---|---|--|---|--|
| | | | Calculation/statement | Yes | No |
| Catchment characterisation (stage 2 of the wastewater resilience metric methodology). (Tier 2 indicator)³ | Catchment characterisation score from the PR19 common performance commitment. | Provides a mechanism to understand the vulnerability of the catchment/sub-catchments to sewer flooding as a result of an extreme wet weather event. | Condition is based on the catchment vulnerability score (i.e. score from 1-5 based on catchment characteristics). Metric has a size exclusion principle for PR19 but it is anticipated that all catchments irrespective of size will be considered at PR24. As such it is considered that this indicator can be applied to all catchments in AMP7 (2020-2025). | Catchment vulnerability score = 4 or 5 (out of 5). | Catchment vulnerability score <4 (out of 5). |
| Intermittent discharge impacts upon bathing or shellfish waters. | | Mechanism to understand the significance of any impact of water company operations on environmental receptors (bathing or shellfish waters). | Any of the intermittent discharges within the catchment. | <p>For intermittent discharges with existing quantitative spill frequency trigger permit conditions, event duration monitoring (EDM) results indicate that investigations are likely to be triggered:</p> <ul style="list-style-type: none"> > For intermittent discharges impacting upon designated bathing waters, EDM spill frequency records 5 spills per bathing season for any bathing season in the previous 5 years. Or model predictions (if available) indicate that these are likely to be crossed within the next 5 years. > For intermittent discharges impacting upon designated shellfish waters, EDM spill frequency records 14 spills per annum for any year in the previous 5 years. Or model predictions (if available) indicate that these are likely to be crossed within the next 5 years. <p>The above spill frequencies are defaults relating to standard permit conditions (3 spills per bathing season for bathing waters, 10 spills per annum for shellfish waters), where different values are in the permit then they are to be amended accordingly.</p> | |

³ The treatment of tier 2 indicators is described in section B.2.2.

| Indicator | Measure | Description | Proceed to DWMP Baseline Risk and Vulnerability Assessment? | | |
|---|--|---|--|---|----|
| | | | Calculation/statement | Yes | No |
| Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A). | | Mechanism to understand the significance of any impact of water company operations on environmental receptors. | Any of the continuous or intermittent discharges within the catchment has a relevant water company: | <ul style="list-style-type: none"> > Action recorded as 'planned' or 'underway' on the Natural Resources Wales Actions Database. Or: <ul style="list-style-type: none"> > 'Remedy' on Natural England's Designated Sites system (associated with freshwater pollution discharges or freshwater drainage). Relating to improving or maintaining the condition of a SSSI, Natura 2000 or Ramsar site (where measures will not be completed prior to the DWMP base year, to address the issues). And/or: <ul style="list-style-type: none"> > Are included within a Nutrient Management Plan and/or a Diffuse Water Pollution Plan, requiring water company action to improve the discharge. | |
| Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B). (Tier 2 indicator)³ | | Mechanism to understand the significance of any impact of water company operations on environmental receptors. | Any of the continuous or intermittent discharges within the catchment has a relevant water company: | <ul style="list-style-type: none"> > Action recorded as 'identified' on the Natural Resources Wales Actions Database. Or: <ul style="list-style-type: none"> > 'Threat' on Natural England's Designated Sites system (associated with water pollution). Relating to improving or maintaining the condition of a SSSI, Natura 2000 or Ramsar site (where measures will not be completed prior to the DWMP base year, to address the issues). | |
| Storm Overflow Assessment Framework (SOAF). | | SOAF procedures: <ul style="list-style-type: none"> > Current activity instigated > Potential for future activity | Are any SOAF investigations ongoing in the catchment, or planned (i.e. EDM data has crossed the SOAF spill frequency investigation triggers), or are likely to be triggered? | Yes, or, model predictions (if available) indicate that SOAF spill frequency investigation triggers are likely to be crossed within next 5 years. | No |
| Capacity assessment framework (CAF). | The focus is on the outputs from either the Initial or Enhanced approaches for the 'present day' case. There are accepted issues around the confidence in outputs from the Initial model which does not include for surface water inputs; in this case some engineering judgement may be required to supplement the outputs. | Provides an indication of capacity constraints in the network as a leading indicator to service failure. | Assessment focuses on the 'present day' case where the foul/combined catchment is: | Categorized as 4 or 5 (due to pipe performance either at a Level 3 'Tactical Planning Unit' or Level 4 'Local Planning Needs' sub-area (if applicable) within the catchment being assessed). However, in making this overall assessment, companies can exclude pipe performance on the peripheral of the catchment categorised as 4 or 5, where these do not represent a significant catchment constraint (potential for growth in the peripheral area needs to be considered). Companies have discretion to take through those that may be categorised as 3, dependent on confidence in the model or where catchments contain localised areas representing a major constraint. <i>For clarity, this catchment approach is to be used for the BRAVA trigger within the risk-based catchment screening; the hexagon approach is to be used for visualising risk within CAF.</i> | |

| Indicator | Measure | Description | Proceed to DWMP Baseline Risk and Vulnerability Assessment? | | |
|--|---|---|---|---|----|
| | | | Calculation/statement | Yes | No |
| Internal sewer flooding ⁴ . | PR19 common performance commitment (internal sewer flooding) ⁵ . | Historical measure that records the number of internal flooding incidents per year (sewerage companies only). Flooding caused by extreme events is included to be consistent with the Ofwat definition. | For small catchments < 2,000 population equivalent (PE). | > Number of incidents is > 1 in total over the last 3 years, excluding any incidents where permanent measures have been put in place to address the root cause of the sewer flood risk (e.g. permanent solutions for hydraulic overload or sewer defect rehabilitation). | |
| | | | For catchments >= 2,000 PE, and 3-year average performance at a company level (based on number per 10,000 connections) is upper quartile. | Annual flooding incidents (number per 10,000 connected properties) in any of the preceding 3 years is greater than the company average. And: > The number of incidents is > 1 in total over the last 3 years, excluding any incidents where permanent measures have been put in place to address the root cause of the sewer flood risk (e.g. permanent solutions for hydraulic overload or sewer defect rehabilitation). | |
| | | | For catchments >= 2,000 PE, and 3-year average performance at a company level (based on number per 10,000 connections) is not upper quartile. | > Annual flooding incidents (number per 10,000 connected properties) in any of the preceding 3 years is greater than the baseline value for upper quartile performance ⁶ . And: > The number of incidents is > 1 in total over the last 3 years, excluding any incidents where permanent measures have been put in place to address the root cause of the sewer flood risk (e.g. permanent solutions for hydraulic overload or sewer defect rehabilitation). | |

⁴ Connected property numbers used for normalising both internal and external sewer flooding performance are to be consistent with the overall number included as part of the Annual Performance Report (being reported in accordance with Regulatory Accounting Guideline 4, specifically pro-forma 4u, item 4u.10)

⁵ A detailed definition can be accessed via the Ofwat webpage: <https://www.ofwat.gov.uk/outcomes-definitions-pr19/>

⁶ In Ofwat's Initial Assessment of Business Plans (published 31 January 2019; Technical Appendix 1 – Delivering Outcomes for Customers), forecast upper quartile performance is assessed as being 1.68 incidents per 10,000 connections for 2020-21. For this condition, if a company is not upper quartile and the catchment under consideration has, in any of the preceding three years, an annual flooding incident rate of >1.68 per 10,000 connections then 'yes' a detailed DWMP methodology assessment will be required; if <=1.68 per 10,000 connections then 'no'. The assessment of upper quartile performance for the purposes of this risk-based catchment screening criteria will be kept under review by the DWMP Steering Group.

| Indicator | Measure | Description | Proceed to DWMP Baseline Risk and Vulnerability Assessment? | | |
|--|---|--|---|--|----|
| | | | Calculation/statement | Yes | No |
| External sewer flooding ⁴ . | PR19 asset health performance commitment (external sewer flooding) ⁵ . | Historical measure that records the number of external flooding incidents per year (sewerage companies only) including flooding caused by extreme events to be consistent with the Ofwat definition. | For small catchments < 2,000 PE. | > Number of incidents is > 10 in total over the last 3 years, excluding any incidents where permanent measures have been put in place to address the root cause of the sewer flood risk (e.g. permanent solutions for hydraulic overload or sewer defect rehabilitation). | |
| | | | For catchments >= 2,000 PE, and 3-year average performance at a company level (based on number per 10,000 connections) is upper quartile. | Annual flooding incidents (number per 10,000 connected properties) in any of the preceding 3 years is greater than the company average. And: > The number of incidents is > 10 in total over the last 3 years, excluding any incidents where permanent measures have been put in place to address the root cause of the sewer flood risk (e.g. permanent solutions for hydraulic overload or sewer defect rehabilitation). | |
| | | | For catchments >= 2,000 PE, and 3-year average performance at a company level (based on number per 10,000 connections) is not upper quartile. | > Annual flooding incidents (number per 10,000 connected properties) in any of the preceding 3 years is greater than the baseline value for upper quartile performance ⁶ . And: > The number of incidents is > 10 in total over the last 3 years, excluding any incidents where permanent measures have been put in place to address the root cause of the sewer flood risk (e.g. permanent solutions for hydraulic overload or sewer defect rehabilitation). | |
| Pollution incidents (Category 1, 2 and 3) ⁷ . | As per the 2017 definition of the Environmental Performance Assessment (EPA). | Historical measure that identifies incidents of unexpected release of contaminants that have resulted in environmental damage. | Based on EPA data and thresholds. | > For any of the previous three years data, a category 1 or 2 incident has occurred. Or: > For any of the previous 3 years data the annual performance for the catchment is classed as 'Amber' or 'Red' (for 2017, this being greater than 25 incidents per 10,000 km of sewer). Or: > Where at least one category 3 wastewater incident has been recorded in the last 3 years and measures have not been put in place to address pollution risk, i.e. there is a significant risk of re-occurrence of a pollution incident. | |

⁷ This requires that all public sewer lengths are used in the normalisation calculation, as advised in the Environment Agency Environmental Performance Assessment (EPA) Methodology (version 3) (https://www.ofwat.gov.uk/wp-content/uploads/2017/12/WatCoPerfEPAMethodology_v3-Nov-2017-Final.pdf)

| Indicator | Measure | Description | Proceed to DWMP Baseline Risk and Vulnerability Assessment? | | |
|-----------------------------------|---|--|--|---|---|
| | | | Calculation/statement | Yes | No |
| WwTW quality compliance. | As per the 2017 definition of the Environmental Performance Assessment (EPA). | Historical measure relating to the performance of the treatment works (discharge permit compliance (numeric)). | Based on EPA criteria. | <ul style="list-style-type: none"> > In any of the previous 3 years, the WwTW discharge has been confirmed as failing and was included as such in the calculation of overall permit compliance. And: <ul style="list-style-type: none"> > Measures have not been put in place, or are not required (subject to Natural Resource Wales / Environment Agency agreement), to address the cause(s) of compliance failure. | |
| WwTW dry weather flow compliance. | Based on measured flow volumes where available and calculated flows where measured flows are not available. | Historical measure of compliance with flow permits. | Where flow measurement is undertaken, using all available flow data has the dry weather flow permit condition criteria been exceeded? Note: permit dry weather flow conditions are expected to change in 2026. The permit condition definition should be used which is in operation at the time of undertaking the Risk Screening exercise. If this does not trigger BRAVA then it is also acceptable to trigger BRAVA on the basis of assessment against the expected future post 2026 permit conditions being exceeded. Prior to 2026 the dry weather flow permit condition is nominally "the Q90 of the measured yearly flows exceeded the dry weather flow permit condition on two consecutive years in the last 5 years". From 2026 it will be replaced by "the Q90 of the measured yearly flows exceeded the dry weather flow permit condition in the most recent compliance assessment calendar year and two or more exceedances have occurred in the preceding 4 calendar years". | <ul style="list-style-type: none"> > Yes, with no measures in place to address compliance risk (or required by the Environment Agency / Natural Resources Wales). Or: <ul style="list-style-type: none"> > Yes, measures have been put in place that address compliance risk but are considered temporary/short-term solutions. Or: <ul style="list-style-type: none"> > Where permanent measures (excluding investigations) to address compliance risk will not be successfully completed prior to the DWMP investment start year (e.g. 2025 for DWMPs published in 2022). | No Or: Yes, measures have been put in place that address compliance risk and are considered permanent long-term solutions |
| | | | Where no flow measurement is in place, or in respect of maximum flows, do headroom calculations indicate the works is at risk of exceeding its flow permit conditions? | Yes | No |

| Indicator | Measure | Description | Proceed to DWMP Baseline Risk and Vulnerability Assessment? | | |
|---|--|---|--|--|----|
| | | | Calculation/statement | Yes | No |
| Storm overflows. | The focus is on using available data to examine permit risks that have not been captured by other indicators. Where monitoring is not in place consideration will need to be given to reported concerns. | Examines issues associated with all storm overflows not captured by other indicators (e.g. issues to be considered include non-compliance with pass forward flow conditions, storm storage conditions (where relevant) and screening requirements). | Is there evidence to indicate that over the last 3 years any overflow is not operating in accordance with permit conditions? | Yes | No |
| Risks from interdependencies between RMA systems. | | A mechanism to understand risk posed by other RMA assets in the catchment. | Risk to be based on developing an understanding of whether there have been historical issues in the catchment through engagement with relevant stakeholders. Fluvial, coastal and surface water flooding potentially impacting on sewer networks (e.g. locking of outfalls) may be assessed through use of Environment Agency flood risk maps overlaid on the catchment area. | Yes, where it is considered that significant risks arise from interaction with other RMA drainage systems / receiving waterbodies. | No |
| Planned residential new development. | | Uses predicted residential population growth forecasts to target catchments requiring investigations for potential future capacity constraints. | Company specific existing long-term forecasts. | Planned residential new development (including committed and infill (e.g. latter based on historical growth patterns)) predicted to be greater than the thresholds shown in Figure B-1 and Table B-3. | |
| WINEP. | WINEP sets out the actions that companies will need to complete to meet their environmental obligations. | Details the specific drivers for mitigating measures. | Known WINEP drivers for specific drainage and wastewater catchments. Investigations, option appraisals and scheme drivers to be included. 'Monitor only' drivers are to be excluded from the indicator, but recorded in the narrative (to ensure recognition for funding). Only drivers related to wastewater activities to be included. Clean water activities are to be considered on a case by case basis for those that impact/have potential to impact on wastewater activities. | There are known WINEP drivers impacting the specific Level 3 catchment and measures (excluding investigations) to address these will not be completed prior to the DWMP investment start year (e.g. 2025 for DWMPs published in 2022). WINEP schemes (with delivery dates within the investment period of the DWMP) identified at a date after the initial BRAVA assessment, will be identified in the annual risk-based catchment screening review triggering catchments that may have previously not been identified to BRAVA, and thus incorporating into the implementation of DWMP plans. (It is noted that the DWMP methodology will outline approaches to delivery of WINEP outcomes (e.g. river catchment based permitting) which could include assessment of specific Level 3 catchments which may not have been progressed to detailed DWMP methodology assessments). | |

Table B-2 – Sewer collapses and blockages – catchment prioritisation criteria

| Indicator | Measure | Description | Catchment prioritisation criteria | |
|------------------|--|--|-----------------------------------|---|
| | | | Calculation/statement | |
| Sewer collapses. | PR19 common / asset health performance commitment (sewer collapses) ⁴ . | Historical measure that identifies risks to the integrity of the sewer system. | For catchments <2,000 PE. | <p>Higher priority:</p> <ul style="list-style-type: none"> > Sewer collapses are > 2 per year in any of the preceding 3 years and measures have been put in place designed to reduce sewer collapse risk, but they are considered temporary/short-term solutions <p>Lower priority:</p> <ul style="list-style-type: none"> > Sewer collapses are > 2 per year in any of the preceding 3 years and measures have been put in place designed to resolve sewer collapse risk, and they are considered long-term (permanent) solutions <p>Or:</p> <ul style="list-style-type: none"> > Sewer collapses are <= 2 per year in any of the preceding 3 years |
| | | | For catchments >2,000 PE. | If the number of collapses (normalised by sewer length) in any of the preceding 3 years is greater than the average for the company over the last year. |
| Sewer blockages. | PR19 asset health performance commitment (sewer blockages) ⁴ . | Historical measure that records obstructions in a sewer (that require clearing) which causes a reportable problem (not caused by hydraulic overload), such as flooding or discharge to a watercourse, unusable sanitation, surcharged sewers or odour. | For all catchments. | If the number of blockages (normalised by sewer length) in any of the preceding 3 years is greater than the company average. |

As detailed in Section B.2.2, if **only** the sewer collapses and/or blockages indicators are breached then at present this is to be treated as if **no** indicators are breached, i.e. there is no requirement to undertake the DWMP baseline risk and vulnerability assessment (BRAVA) and problem characterisation process steps, and current planning approaches to risk assessment and option development and appraisal are to be continued.

It is expected that catchments will be assessed, using current practices, with reference to the priority order arising from the risk-based catchment screening

B.2.1.4. Planned residential new development thresholds

Planned residential new development thresholds are provided in the following figure and table, supplementing the text within Table B-1.

Values are tabulated below.

Table B-3 - Planned residential new development thresholds

| Residential PE (nr) | Residential PE forecast percentage exceedance threshold | |
|---------------------|---|-------------|
| | 10-year (%) | 25-year (%) |
| 10 | 40.0 | 60.0 |
| 50 | 16.0 | 28.0 |
| 100 | 10.0 | 18.0 |
| 250 | 8.5 | 14.5 |
| 500 | 8.0 | 13.0 |
| 1,000 | 7.0 | 11.5 |
| 2,000 | 6.0 | 10.5 |
| 5,000 | 5.0 | 8.5 |
| 10,000 | 4.5 | 7.0 |
| 50,000 | 2.5 | 4.0 |
| 100,000 | 1.5 | 3.0 |

It is expected that companies will interpolate between these values for specific catchment residential population equivalents, or simply apply the lower threshold between the values not defined in the table.

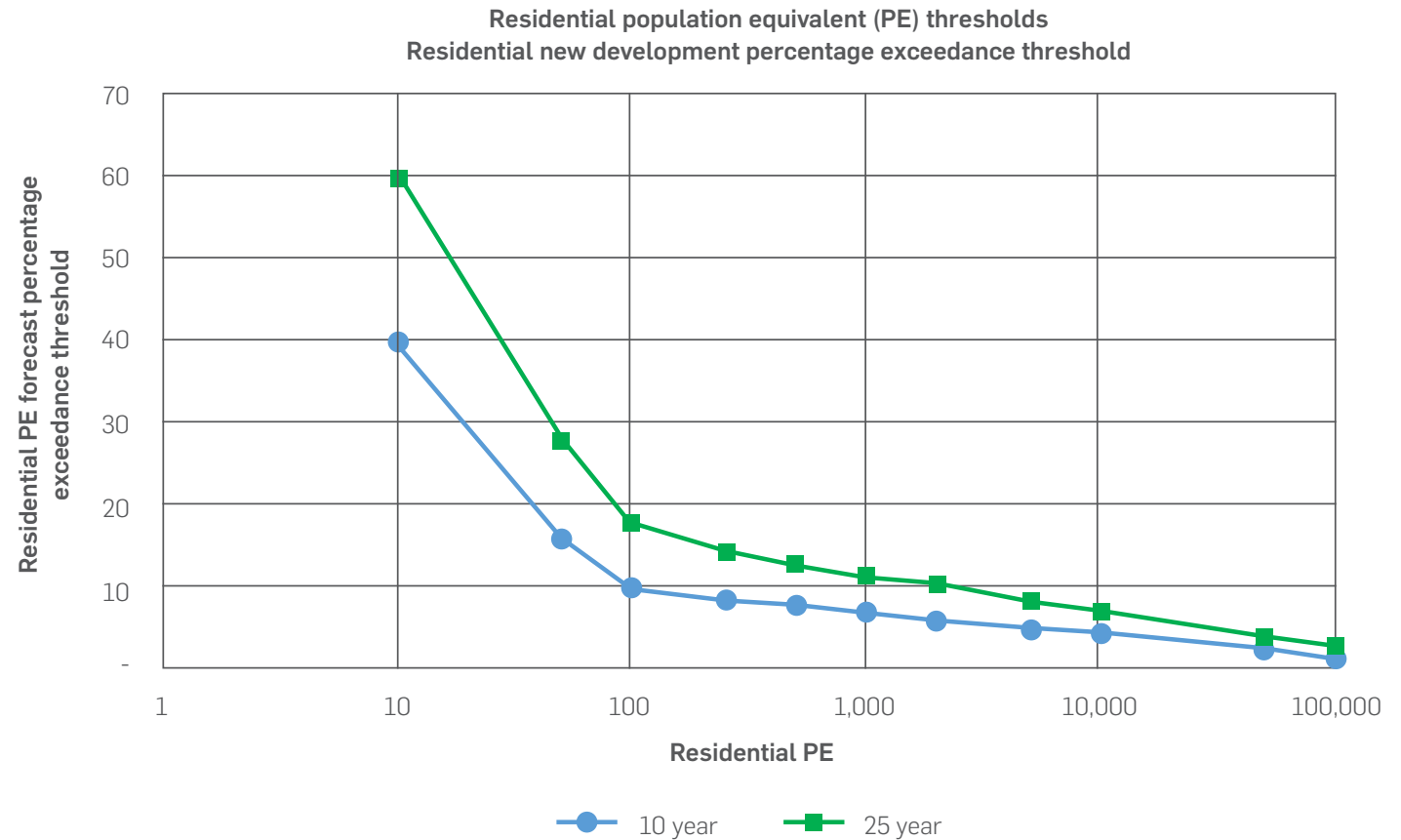


Figure B-1 – Planned residential new development thresholds

B.2.2. Progression to BRAVA

Indicators have been classified into two tiers, providing a mechanism to differentiate between the priority of each indicator tier when considering whether further assessment is justified. The following two indicators have been classified as 'second tier' (with all other indicators being 'first tier'):

- > Catchment characterisation (stage 2 of the wastewater resilience metric methodology).
- > Continuous or intermittent discharges impact upon sensitive receiving waters (part B).

When summing the total number of indicator breaches (of screening criteria as defined in Table B-1) across both indicator tiers:

- > If **two or more** indicators are breached (excluding sewer collapses and blockages – see third bullet) then a BRAVA is required to identify whether and to what extent changes in future inputs impact on planning objectives.
- > If **one** indicator is breached (again, excluding sewer collapses and blockages – see next bullet) then a BRAVA is required, **if the indicator causing the single breach is included within the first tier.**
- > If **only** the sewer collapses and/or blockages indicators are breached then at present this is to be treated as if **no** indicators are breached, i.e. there is no

requirement to undertake the DWMP BRAVA and problem characterisation process steps, and current planning approaches to risk assessment and option development and appraisal are to be continued. Further development of the DWMP process is required to define a specific and consistent extended and complex planning approach for these supply-side risks; however, companies have the flexibility where current planning processes allow to define their own extended and complex approaches to asset deterioration assessments.

- > If **no** conditions are met this implies that there is no current evidence to suggest that the L3 catchment is likely to be vulnerable to changes in future inputs. Companies will be expected to apply existing approaches for long-term planning against asset deterioration but no detailed baseline risk assessment is required. Companies will still need to undertake the wider resilience assessment for the catchment.

The inclusion of only two indicators in a second tier means that for these to influence the decision to proceed to BRAVA, they must both be breached (independently of others). However, the introduction of this mechanism also provides water companies with the opportunity to include bespoke indicators in the second tier, where considered more suitable than assigning first tier priority.

B.3. Other considerations

B.3.1. Normalisation

Some of the criteria require catchment-wide summations of historical incident data (e.g. sewer flooding), which is then normalised, for comparison against company averages/upper quartile performance. It is acknowledged that this approach may result in instances where the catchment performance does not breach the stated thresholds, even though there may be significant localised issues present within the catchment (dependent on the extent of the performance difference between the local area and the remaining catchment). As described for new development in section B.2.1.1, the DWMP is a strategic plan; the expectation would be that investigations into existing, significant localised issues would be already be initiated as part of shorter-term tactical planning (e.g. under investigations as part of current delivery programmes). Companies can construct bespoke indicators to capture such occurrences, if it is considered that they are not being addressed within current tactical plans and warrant consideration within the strategic plan.

B.3.2. Insufficient data/information to complete the screening process

If due to missing data/information it cannot be confirmed whether an indicator is breached or not, this is to be treated as a breach of the indicator (i.e. supporting progression to BRAVA). In such instances, the data/information gap would need to be addressed to complete BRAVA, therefore it would be anticipated that companies will prioritise investigations, enabling the risk-based catchment screening to be revisited, so that a decision can be taken whether to proceed with further investigations.

B.4. Risk-based assessment output

Outputs from the assessment should be summarised at a L2 planning area and at a company level for inclusion in the DWMP documentation. Companies can present this output data graphically (for example GIS outputs) or in tabulated form; however, it is important that any completed templates, etc., are stored in a manner that would enable ease of access and reference should audit or assurance be required. This would also enable updates to be made as and when required for subsequent DWMPs. Companies could develop their GIS and data warehouse systems to present within a 'live' software environment.

Whilst the screening process has used criteria that return a simple yes/no response (to determine progression to the BRAVA process step), companies are encouraged to further develop the output, to assist in their communication of risk to strategic planning groups and other stakeholders. The diagram in Figure B-2 provides an example extension to the defined approach that builds on the assessment output.

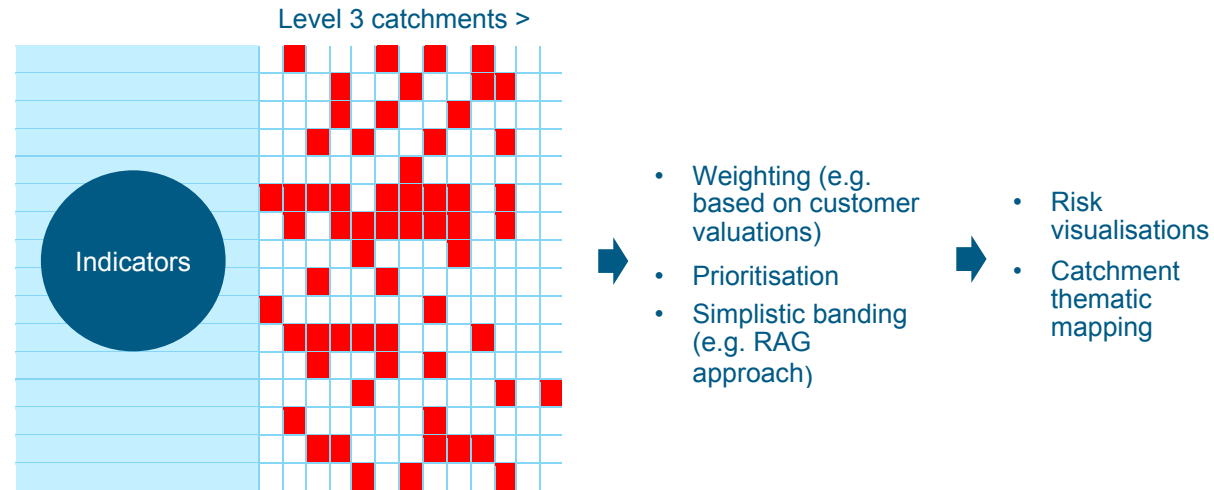


Figure B-2 – Example of further extension of risk-based assessment outputs



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