

A framework for the production of
Drainage and Wastewater Management Plans

Appendix F

Example contents of a drainage and wastewater management plan

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

September 2019

Report 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.

First issued September 2018.

Updated May 2019 and September 2019.

Notice

This document and its contents (including all associated appendices) have been prepared for Water UK. All information contained in this document and associated appendices is made available without responsibility or liability of any nature (including in negligence) on the part of Atkins Limited, and is not to be relied upon as a statement or representation of facts. Atkins Limited does not make or give, nor has any person authority on its behalf to make or give, any representation or warranty whatever in relation to the contents of this document.

This appendix supplements the information provided within the main framework document for drainage and wastewater management plans (DWMPs), by outlining an indication of the expected contents of a DWMP. 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 document will be applied here.

Indicative content is provided for the following documents; note that while it is anticipated that the '**Non-technical summary**' and '**Technical summary**' will form the customer/stakeholder facing documentation and, as such, will be referred to as **the DWMP**, the plan itself encompasses all the outputs from the planning process incorporating not only the summary documentation but the detailed L2 and L3 assessments.

- > **A non-technical summary** which outlines the plan in an easily accessible and readable format including the background, high level

drivers and levels of service against which risk is assessed, the stakeholder and customer engagement process, links to other plans, the evidence base and proposed solutions at the appropriate level of detail. The audience is envisaged to be those partners and organisations external to the water company who are planning and managing, infrastructure, flood risk and the environment.

- > **A technical summary** which follows a similar structure to the non-technical summary but goes in to more detail around the approaches taken in developing and producing the plan. This will include approaches to uncertainty, scenario planning and adaptive pathway approaches where appropriate and the cost benefit analyses. It is envisaged that the technical summary will provide greater detail on the outputs of the assessment and the mechanisms used to derive the final preferred near, medium and long-term plan, underpinned by engagement.
- > **The plan** which provides the detail of the approach, outputs and interpretation of the assessment and derivation of the draft preferred plan and, subsequent to consultation, the final plan to be used as the basis for the strategic business plan. Drawing on detailed technical assessment reported in the appendices, the plan will provide a step by step description of the development of the DWMP.
- > **Technical appendices** to provide supporting detail on the assessments and outputs undertaken at a more

granular level, that have been aggregated to form the company-wide view. This will cover a summary of the approach and outcomes of the framework process stages, for defined levels below the company operating area.

It is also anticipated that companies will produce a **customer facing document** that will outline in easy to understand language why the plan has been developed, what it represents, how it has been produced and a high-level summary of what the company is proposing to deliver in the near, medium and long-term to maintain agreed levels of service.

The content outlined could be delivered to the various interested parties in a variety of formats, making use of the expanding digital capabilities of companies. For example, it is anticipated that the DWMPs will be made available to stakeholders and customers through companies' websites. Similarly, the evidence base supporting the final plan could be provided on-line through platforms spatially displaying data and information. Subject to requirement, companies will need to ensure that information is presented and maintained in such a manner as to enable effective audit and assurance.

The following elements provide indicative content of the documentation outlined previously (note that the element titled 'Appendix: Detailed level 2 assessment' is an **example** of a technical appendix referred to previously and not an appendix to this guidance document).

Non-technical summary

The objective of the non-technical summary is to provide an easy to understand (plain English) and stand-alone summary of the DWMP including:

- > Why the document is being published and what it contains
- > Background to the company's service provision
- > How the company sets out its plan areas
- > Levels of service against which current and future performance has been measured
- > Future drivers of change and the need for future investment
- > How future inputs have been accounted for (including growth, creep, climate change, etc.)
- > How uncertainty has been assessed
- > How options have been developed and appraised (including demonstration of innovative thinking and options to deliver wider benefits)
- > How the company has engaged with stakeholders and how their views have influenced the development of the DWMP and the decisions taken in developing the preferred plan

- > Summary of the outcome of the assessments and preferred programme over the next 10 and 25-year horizons including the costs of delivery and benefits of that programme for customers, stakeholders and the environment

It is suggested that the summary also acts to sign-post the reader to that section of the technical summary which contains more detailed information.

Introduction

Outlines why the document is being published (governments' priorities, etc.) and what it contains.

Background

Company information – size, operating area, population served, etc.

Planning areas

Defines at a high level the L2 planning areas (GIS maps, etc.) – base information... (e.g. 10 L2 areas containing in total 340 individual L3 catchments, etc.).

Levels of service

Sets out the key levels of service against which current and future performance have been assessed, how they have been derived and consulted upon with customers, regulators and stakeholders, and the mitigation targets to be achieved through development of options where capacity (infrastructure and non-infrastructure) 'deficits' have been identified.

Customer and stakeholder engagement

Outlines the approach to customer and stakeholder engagement – use of L2 forums, customer challenge groups, etc. Possible sub-headings:

- > Engagement with customers
- > Engagement with customer challenge groups
- > Engagement with stakeholders
 - To include the views expressed by stakeholders and how those have influenced the derivation of the planning objectives and the DWMP and the decisions taken in developing the L1 optimised plan; where trade-offs have been made and why
 - To include relevant details of partner organisation actions / action plans that are being undertaken either through their own investment / land use policies or in association with water companies. This element is considered important to demonstrate that DWMPs have been developed taking on board common goals and/or shared objectives

Plan development

Section that outlines at a **high-level** the overall approach taken to include for:

- > Risk-based screening – to focus effort
- > Baseline risk and vulnerability assessment to include for approaches to catchments without models but with identified risk indicators from screening approach and how uncertainty has been assessed in relation to:
 - Changes in forecast demand
 - Climate change
 - Etc.
- > Problem characterisation – how have the problems been characterised with respect to subsequent options development and appraisal
- > Options development and appraisal – summary of the approach adopted
- > Preferred options – making the case for investment

Programme appraisal

Outline as to how the preferred programme has been developed, with a focus on the 10 and 25-year periods. Discussion of the decision support tools (DSTs) used, metrics and target levels of service, and assessment of options and programme costs and benefits to show the outcomes for the company, its customers, stakeholders and the environment.

Summary of programme outputs

Companies can decide on the most appropriate approach to present the outputs that effectively feed into the high-level customer facing summary. Options include a summary by planning horizon and L2 area; for example:

- > Over the next 5-years:
 - L2 area AA1 – three catchments with quality drivers at treatment works. Solutions have identified a river catchment wide programme of investment at seven wastewater treatment works to manage receiving water quality issues and remove the risk of non-compliance at the three identified catchments. Solutions have taken on board a 25-year planning horizon.
 - L2 area AA2 – two catchments identified with flow constraints that could increase the risk of properties at risk of internal flooding as a result of planned growth. Two solutions involving working with lead local flood authorities to remove surface water ingress to the combined sewer system have been developed.
 - Etc.
- > Over the next 5 to 10-years:
 - L2 area AA1 – four catchments identified with flow constraints that could increase the risk of properties at risk of internal flooding as a result of planned growth. Two solutions involve sewer capacity upgrades, two involve working with lead local flood authorities to remove surface water ingress to the combined sewer system. All solutions have taken on board potential needs to the 25-year horizon.
 - L2 area AA2 – three catchments identified as being at risk of non-compliance with wastewater treatment works dry weather flow permits. Solutions have identified opportunities to reduce customer flows as an initial step with wastewater treatment works upgrades proposed should customer measures not achieve the flow objectives. Additional flow monitoring in strategic areas planned.
 - Etc.
- > The longer term, 10 to 25-year, plan:
 - L2 area AA1 – no long-term risks identified subject to completion of the identified 10-year intervention.
 - L2 area AA2 – for one catchment complex issues have been identified from 2040 with respect to increased sewer flooding risk but significant uncertainty in future growth projections. A programme of monitoring is to be established from year 2030 to better understand changes in the catchment. Initial options have been considered to address the issues should they arise.
 - Etc.
- > Where appropriate for individual companies, the above may become a medium-term view and an additional longer-term perspective may be necessary where there are significant risks and uncertainties: Trends and potential longer-term risks to the plan to 2080/2100.

The DWMP

The DWMP describes the detailed steps taken on each of the key elements to develop the plan. Some of the detailed assessment will be summarised and where appropriate be described in detail as technical appendices to the DWMP. In addition to bringing the overall plan together at L1 level, the plan will describe the key information that has informed the assessment processes utilised to produce the L2 outputs detailed in the appendices; however, where there is information that is perhaps at too granular a level reference can be made to documents held on company's systems provided a clear trail is provided to enable, as necessary, audit/assurance processes.

Note: the plan will need to meet the requirements of the Security and Emergency Measures Direction (2006), removing any asset and scheme specific detail.

Technical summary

The DWMP should include a technical summary of each of the key elements also reported within the public facing summary document. It is designed to be read by more technical specialists, principally regulators and specialists in the stakeholder community with whom the company has engaged and will sign-post sections within the plan where detailed assessments are reported.

Overview

Section provides an overview of drainage and wastewater services covered by the plan, customers and the area served; the requirement for the plan; and approach taken.

Planning areas

Section provides the detailed approach to the company's development of its planning areas, where these accord with the methodology and where they may vary to suit circumstances (e.g. large urban catchment is accorded L2 status with, for example, L3 areas representing catchment elements above pumping stations).

Customer and stakeholder engagement

Section provides greater detail on how the company has developed its customer and stakeholder engagement processes. In particular:

- > How the strategic planning groups have operated at L2 (e.g. how data have been shared, timing of involvement of key stakeholders, etc.);
- > The outcomes of the engagement process.

Planning objectives

Section provides greater detail on how the company has developed its planning objectives against which current, medium and long-term performance has been assessed with a view to identifying the need for, and nature of, any required interventions. Companies will need to evidence the levels of risk that have been

assumed in defining the need for an intervention and how they have been consulted upon with stakeholders and customers; for example:

- > The wastewater resilience metric provides an output of % of catchment population at risk of flooding from a 1:50 return period storm event;
- > If the base year figure is 1% and, taking on board changes in inputs (e.g. growth), the medium-term figure (10 year) is 5% and the long-term (25 year) figure is 7%, do these changes warrant interventions?

Companies will need to also make their own judgements based on customer research as to the levels of risk that are 'acceptable' to customers.

Plan development

Section provides greater detail on how the company has developed its plan (e.g. approaches to demand forecasting, sensitivity testing, scenario development, options development and appraisal (including approaches to benefits valuation), etc.). The framework will provide direction but also flexibility where companies already have appropriate processes in place – where these may vary from the framework, companies will need to identify how the processes selected are appropriate.

Programme appraisal

Section provides greater detail on how the company has developed its overall programme covering the medium and long-term. Where DSTs have been

developed they should be described such that a technical person who may not be familiar with the specifics can understand the process.

Strategic Environmental Assessment (if required)

Section provides detail of any Strategic Environmental Assessment (SEA) undertaken; the options development process will have utilised environmental and societal assessments aligned to SEA requirements. The SEA should be undertaken at a programme (L1) level; the optimisation process at L1 will have included an assessment of environmental/societal impacts, however, it is anticipated that a programme level SEA will only be undertaken on the final optimised plan. Where a DWMP level SEA is deemed necessary this should be published as a separate report.

Summary of programme outputs

Section provides greater detail on the programme outputs – as the appendices will provide the detail of L2 activities it is envisaged that this will expand on the information provided in the relevant non-technical summary section.

Appendix: Detailed level 2 assessment

Appendix A: Level 2 name or unique identification number – e.g. AA1

1. Background

[Description of the level 2 area] The AA1 L2 area covers...

[Description of the level 2 strategic planning group] A strategic planning group was established that encompassed the following stakeholders:

- > X
- > Y
- > Z

[Description of how the L2 forum operated and extent of engagement process – data/ plan sharing, options developments, partnership working arrangements where required, etc.]

2. AA1 Level 2 risk-based catchment screening outputs

The following table summarises the outputs from the risk-based catchment screening process undertaken in accordance with industry guidelines and assessment undertaken against the levels of service and risk indicators as outlined in section X of the technical summary.

Note: *while tabulated here companies can present the outputs in whatever form they choose provided it is clear*

Based on the risk-based catchment screening, four L3 catchments were taken forward for more detailed assessments. Details of assessments undertaken are provided in the following sections.

Table F-1 Risk-based catchment screening outputs

Level 3 id	Risk-based screening criteria name e.g. internal sewer flooding					Detailed DWMP assessment?
AA1a	Y	N	N	N	N	Y
AA1b	N	N	N	N	N	N
AA1c	N	Y	N	N	N	Y
AA1d	N	N	Y	Y	N	Y
AA1e	N	N	N	N	Y	Y

3. Options development

3.1. Generic options

Summary of the generic options developed at company level (or reference to appropriate documentation).

3.2. Level 3 catchment name or unique identification number – e.g. AA1a

Background

Outline description of the catchment including diagrams/maps if appropriate.

Risk-based catchment screening

Brief outline of the risk indicators that indicated further assessment required.

Baseline risk and vulnerability assessment

Outline details of the assessment including specific drivers:

- > Growth (residential and non-residential) – details of how growth projections have been derived and uncertainty assessed (scenarios developed)
- > Infiltration
- > Creep
- > Climate change – rainfall uplifts, etc.
- > Quality – either Water Industry National Environment Programme specific drivers or target objectives from river basin management plans
- > Impacts from other risk management authority plans - are there activities (planned/ongoing) that could mitigate risks or provide an opportunity for co-development to address shared problems

Outline against level of service indicators specific problems identified in the 5, 10 and 25-year horizons for which a solution is required, graphics used to highlight the issues (e.g. modelling outputs, erosion of wastewater treatment works headroom, etc.).

Problem characterisation

Outline of the problem and characterisation against criteria to ascertain the type of options appraisal required e.g. simple (no significant issues in near-medium term) but need to develop better understanding of risks through modelling/monitoring, etc.; extended (limited options to be considered); complex (problem will likely require extensive partnership working/scenario planning and for example an adaptive pathway approach).

Option development and appraisal

Description of the option development and appraisal process undertaken including cost benefit analysis. It should take the reader through the complete process from generic to feasible/ constrained options into the appraisal process (including how assessments such as ecosystem services, etc. have informed options appraisal). Inevitably a number of options will be rejected or excluded through the process, so this section should include a rejection register which has been maintained throughout the plan process and shared/ consulted upon with stakeholders.

Preferred option

Description of the preferred option based on cost benefit analysis to include for requirements (e.g. surface water management), costs (these will be at a feasibility rather than detailed design level) and benefits, delivery and partnership working arrangements if appropriate, timing of intervention (start date for feasibility studies, construction, etc.), estimated date for completion, and the outcomes/benefits to be gained against level of service metrics.

3.3. Level 3 catchment name or unique identification number – e.g. AA1b

Background

Outline description of the catchment including diagrams/maps if appropriate.

Risk-based catchment screening

Brief outline of the risk indicators that indicated **no** further assessment required.

Short catchment appraisal

Catchment AA1b has not been identified as requiring more detailed DWMP assessment; however, the that catchment should be subject to additional questions:

- > Resilience – excluding resilience assessments included in the detailed DWMP assessment are there any other resilience issues that have been identified:
 - Power outage (from a range of hazards): need for back up supplies at pumping stations, works, etc.?
 - Requirement for catchment specific response recovery plans in case of any issues or is a generic response recovery plan acceptable?
- > Are additional investigations required to address identified information gaps?

Any identified requirements are to be 'pooled' under a L2 investment line that covers 'Resilience' and 'Investigations'; this could subsequently be aggregated up to company level 'resilience' / 'investigations' pooled investment need.

3.4. Level 3 catchment name or unique identification number – e.g. AA1c, etc.

4. 'Initial' Level 2 prioritised plan

Companies should define the prioritisation process (including engagement with L2 strategic planning groups) and the outcomes. This is the plan that will feed into the L1 DWMP.

A blue-tinted photograph of a green leaf resting on a textured, light-colored surface. A white diagonal line runs from the top right towards the bottom right, crossing the leaf. The background is a solid blue color.

John Sutherland / Gian Illari / Brian Arkell

Atkins Limited
Woodcote Grove
Ashley Road
Epsom
Surrey
KT18 5BW

Tel: +44 (0)1372 726140
Fax: +44 (0)1372 740055