Water resources planning guideline - navigation tool for smaller water companies

October 2012

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Acting to reduce climate change and helping people and wildlife adapt to its consequences are at the heart of all that we do.

We cannot do this alone. We work closely with a wide range of partners including government, business, local authorities, other agencies, civil society groups and the communities we serve.

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1 About this navigation tool

1.1 Purpose

The Environment Agency is committed to supporting water companies in meeting their statutory environmental duties by offering guidance and advice.

This navigation tool is designed to help smaller water companies focus on the key elements of a water resources management plan (WRMP) that are relevant to them, but it does not replace the Water Resources Planning Guideline. This tool should be used alongside the guideline, and companies should follow the guideline to make sure that their plans cover the requirements specified by the Water Industry Act 1991.

The planning guideline is made up of four main parts: the guiding principles, the technical guideline, the water resources planning tables and the table instructions. These documents and some supporting research are available from the Environment Agency website at http://www.environment-agency.gov.uk/business/sectors/32425.aspx

The Water Resource Planning Guideline has recently been updated, following a review of the process in 2009. The key changes to the latest version of the guideline include a clear separation of Government policy from technical guidance and a joint approach to writing the guideline from Defra/Welsh Government, the Environment Agency and Ofwat.

1.2 Who is it aimed at?

It is aimed at smaller water companies. For the purpose of this document, smaller water companies can be defined as any water company:

- with a Total Water Available for Use of less than 5 million litres per day (Ml/d) or;
- supplied entirely from bulk supplies or;
- with a limited number of customers (<50,000).

1.3 Government

In this document, the term Government is used to cover Government policy in England and Wales.

It is important for water companies operating in Wales to note that in May 2012, the Minister for Environment and Sustainable Development, John Griffiths announced that a Natural Resources Body will be created to bring together the Forestry Commission Wales (FCW), Countryside Council for Wales (CCW) and the Environment Agency Wales (EAW). This new organisation will begin operating in April 2013. Until there are more details of how this new organisation will work, this document will continue to refer to the separate organisations.

2 The water resources management planning process

2.1 What is a water resources management plan?

A water resources management plan shows how you will balance the supply and demand for water over the next 25 years. The plan takes into account pressures on demand such as population growth against the available water for supply and includes a buffer for uncertainty. Where you identify a potential deficit in supply, your plan should identify the most appropriate solution for achieving a supply-demand balance that will enable you to meet your statutory supply duty.

Plans are living documents and you must review and report on your plan to the Secretary of State and/or Welsh Ministers each year, according to the annual review guideline[1]. You must produce a new plan every five years (or earlier if there is a material change of circumstances or the Secretary of State or Welsh Ministers direct you to prepare a new plan). The plan is complemented by your drought plan.

You should refer to sections 2.1 and 2.3 of the WRPG - technical methods and instructions for an overview of what your plan should contain.

In addition, your plan should contain the necessary Water Resources Planning data tables (WRP tables) as Excel spreadsheets. Water resources planning tables are tables that provide the data showing your supply-demand balance and supporting your plan. They are fundamental to your water resources management plan.

The WRPG – technical methods and instructions for the supply-demand tables tells you which tables you should complete to support your plan.

[1] http://publications.environment-agency.gov.uk/pdf/GEHO0910BTBQ-E-E.pdf

2.2 Statutory duties

All water companies have a statutory duty to prepare and maintain a Water Resources Management Plan (hereafter known as "the plan(s)") under sections of the Water Industry Act, 1991, brought in by section 62 of the Water Act 2003. These duties are detailed in the Water Resources Management Plan Regulations 2007 and the Water Resources Management Plan Direction 2012.

2.3 Overview of statutory process

The Guiding Principles document (WRPG - the guiding principles for developing a water resources management plan) provides detailed information on the statutory process, including a diagram providing an overview of the statutory planning process on page 25, details on who and how to consult, guidance on how to deal with national security and commercial confidentiality as well as a guide to the roles and responsibilities of the regulators.

2.4 Risk-based approach to producing a water resources management plan

Section 1.8 of the WRPG - technical methods and instructions outlines how we will take a risk-based approach to our level of scrutiny of water company plans.

The bigger the risk or problem, the more work a water company will be expected to do to make sure it is planning for a secure supply of water, and the more scrutiny it will receive from the regulators. There are a number of factors that will influence how complex your plan is, for example:

- your supply area - the number of discrete areas you supply;
- whether your baseline supply-demand balance is in deficit;
- whether you receive all your water supplies as bulk supplies of treated water from donor companies; or you receive bulk supplies of raw water and own your own treatment works; or you own and manage your own sources of supply.

Where there is a supply-demand deficit, water companies should complete an options appraisal to identify the preferred options to address this deficit. Where there is no deficit forecast, there is no need for an options appraisal. This will reduce the complexity of the plan.

The assessment of water supply is simpler for water companies that receive all their water supply as bulk supplies. Such water companies should be able to produce a more streamlined, less complex plan than water companies that own and manage their own water sources of supply. For example, water companies that receive all their water supply as bulk supplies do not need to complete a deployable output assessment.

2.5 Water company business plans and drought plans

A statutory water undertaker must prepare a five year business plan as well as a 25-year water resources management plan. Check with Ofwat for guidance on preparing this. See the section in the WRPG - the guiding principles for developing a water resources management plan on water resources management plans and the business planning process.

You must also publish a drought plan detailing how you will manage drought. The Environment Agency fulfils the same role for water company drought plans as well as WRMPs. For guidance on completing drought plans, please see the drought planning guideline.

2.6 Understanding the terminology

Consult the document Definitions of key terms for water resources practitioners (UKWIR/Environment Agency, 2012) for a detailed glossary explaining all the water resources management plan terms you will encounter.

3 What should I include in my plan?

NB If your supply comes from bulk supplies only, it will be much simpler to estimate your supply.
Your plan should contain the following:

Category/guidance	What must/should I do?	Where can I get this information from?	References and other sources of guidance
3.1 Policy			WRPG – Guiding Principles
Policy	Ensure your plan reflects the relevant Government policy. The key policy priorities that both Governments expect water companies to address in their plans are all aimed at providing secure, sustainable and affordable supplies of water to customers. They include: • taking a long term perspective; • taking better account of the value of water reflecting its scarcity and environmental damage; • considering all options to balance supply with demand, including water trading, cross boundary solutions and third party solutions; • reducing demand for water.	See the sections on Government Policy and Directions in WRPG - the guiding principles for developing a water resources management plan.	WRPG – Guiding Principles (pages 4-11)

Category/guidance	What must/should I do?	Where can I get this information from?	References and other sources of guidance
National security and commercial confidentiality	Follow the guideline regarding national security and commercial confidentiality		WRPG – Guiding Principles (page 21)
Consultation	You must follow the WRMP Regulations 2007 so that you know whom to consult.	WRMP Regulations 2007	WRMP Regulations 2007
3.2 General plan content			Technical Guideline: Section 2 – Building your plan the basics
Geographical scale of assessment	Make sure your plan provides details at the water resource zone level. In most cases, you should treat each discrete supply area as a separate resource zone.	A water resource zone is defined in section 2.5 of the WRPG - technical methods and instructions.	Section 2.5
Scenarios	Table 2.1 in Section 2.6 of the technical guideline details which scenarios you should calculate and/or publish. You should calculate the normal year, dry year annual average and weighted average demand scenarios (the weighted average demand forecast will form the basis of your revenue forecast when Ofwat sets price limits). You should publish details of the latter two in your plan. If your water resource zone also has a critical (peak) period deficit, you should also publish the critical period planning scenario. If an option is required in your plan, you	You could use data from neighbouring water companies' plans to estimate the dry year factor and to determine if you should produce a critical period planning scenario. Check the plans of neighbouring companies to see how they have estimated their dry year, normal year and critical period scenarios. If your supply comes from a bulk supply agreement from a donor company it should specify a quantity under dry year conditions. You should ensure consistency with the donor company's plan.	Section 2.6

Category/guidance	What must/should I do?	Where can I get this information from?	References and other sources of guidance
	should publish the utilisation scenario.		
3.3 Supply			Technical Guideline: Section 3 – how much water is available for supply?
Water available for use	Include an assessment of your water supply for the next twenty-five years. This should be based on the deployable output of your sources of supply. If all your supply comes from a bulk supply agreement from a donor company, you should include this either as a potable or raw water import. You should not do a deployable output assessment. If you own and manage your own sources of supply, you should assess the deployable output(s) of your sources. There are a number of methodologies for doing this. You should make it clear how you have derived your data and the assumptions you have based your assessment on.	The following documents give full details of the methodologies for assessing deployable output of surface water and groundwater: • A methodology for the determination of outputs of groundwater sources (UKWIR, 1995b); • Surface water yield assessment (NRA, 1995); • A unified methodology for the determination of deployable output from water sources (UKWIR and Environment Agency, 2000); • Critical period groundwater yield (UKWIR and Environment Agency, 2001). Water resources planning tools 2012 – Deployable Output report (UKWIR and Environment Agency, 2012)	Section 3
Imports/exports	You should include all your potable and raw water imports and exports.	Your bulk supply legal agreement with a donor or incumbent water company.	Section 3.5
Reductions to	Medium-term and longer-term losses of	If your supply comes from a treated water bulk supply	Section 3.2

Category/guidance	What must/should I do?	Where can I get this information from?	References and other sources of guidance
deployable output	deployable output from sources should be considered as reductions in deployable output. These include any sustainability changes due to unsustainable abstraction. You should make it clear how you have derived your data and the assumptions you have based your assessment on.	agreement from a donor company, it is unlikely that you will have any reductions to account for. Check with the Environment Agency to confirm any reductions you should plan for. If you own and manage a water treatment works, check with the Environment Agency for information on whether you should include any reductions.	
Impact of climate change	You must follow the requirements of the WRMP Direction, 2012 in respect of climate change. You should assess the impact of climate change on your sources of supply. You should make it clear how you have derived your data and the assumptions you have based your assessment on.	The WRMP Direction 2012. The WRPG – Guiding Principles (Appendix) provides an explanation of the Directions. If your supply is via a bulk supply agreement, check the details of this agreement. It is likely that the risk of climate change affecting supply will be met by the donor company and not you, as the recipient. If this is the case, you can assume that the impact of climate change on your supply is zero. If you own and manage your own sources of supply, check the WRPG - technical methods and instructions for information on how to estimate the impact of climate change.	Section 3.3
Outage	You should assess the impact of any planned or unplanned outage events. You should make it clear how you have derived your data and the assumptions you have based your assessment on. If your supply comes from a treated water	Check your donor company's plan which should contain outage data and/or assumptions that may be of use. If you own and manage a water treatment works, check the WRPG for information on how to estimate outage.	Section 3.4 and Outage allowances for water resources planning (UKWIR, 1995)

Category/guidance	What must/should I do?	Where can I get this information from?	References and other sources of guidance
	bulk supply agreement from a donor company, you should not do an outage assessment.		
3.4 Demand			Technical Guideline: Section 4 – what is the demand for water?
Dry year and weighted annual average base demand	Within your water resources management plan you should clearly show how you have produced the dry year base demand and weighted annual average demand estimate.	You should use your out-turn data as the basis for estimating dry year and weighted annual average demand.	Section 4.2
Base year population and property figures	You should estimate population and property numbers for your base year in each resource zone and provide a total for your company area. You should then use the base year to forecast population and property numbers into the future.	The WRMP Direction 2012. The WRPG – Guiding Principles (Appendix) provides an explanation of the Directions. You will most likely already have reasonably reliable data for your appointments, if not, then the main sources of information for current and future population and household numbers are local authorities and local planning documents. You should work with your local authorities and use data that is included in local plans. An approach for doing this in England is set out in the revised report - Methods of Estimating Population and Household Projections. A water company supplying water to customers in Wales should use the latest local authority population and household projections published by the Welsh Government.	Section 4.2.2
Population, property and occupancy rate forecast	You must follow the WRMP Directions, 2012 in respect of your household property forecast. You should include a forecast for the number of non-household and household customers and properties you will be serving, along with the occupancy rates you have assumed. You should detail the assumptions and data you have used to generate these figures.		

Category/guidance	What must/should I do?	Where can I get this information from?	References and other sources of guidance
Household consumption	You must follow the WRMP Directions, 2012 in respect of your forecast household demand. For water companies that supply household customers, you should include the current and forecast per capita consumption you are assuming and detail the data and assumptions that you have based these on. You should provide a breakdown of per capita consumption into the micro-components of water use. The sum of your micro-component estimates should match your overall per capita consumption figure. You should make it clear how you have derived your data and the assumptions you have based your assessment on.	The WRMP Direction 2012. The WRPG – Guiding Principles (Appendix) provides an explanation of the Directions. Check the WRPG - technical methods and instructions to find out how to forecast household consumption. Use your own customer metering data, if you have them, to provide information about current consumption. If your supply is via a bulk supply agreement, it may be possible to use relevant micro-component data from your donor company. Otherwise these data can come from reconciling consumption monitors of neighbouring water companies with a similar customer base, your own or neighbouring water company customer surveys and from knowledge of your supply area. Alternatively, you could base your forecasting assumptions on the assumptions used by neighbouring water companies for comparable customer groups. Check their published plans for information on this.	Section 4.2.4/5 and Methods of Estimating Population and Household Projections (Environment Agency, updated in 2012) and outputs of Customer behaviour and the demand for water (UKWIR and Environment Agency CU02 2012) Demand Forecasting Methodology (UKWIR and NRA, 1995) and Forecasting Water Demand Components (UKWIR, 1997).
Non-household consumption	For water companies that supply non-household customers, you should include a forecast of the overall consumption you are assuming and detail the data and	Check the WRPG - technical methods and instructions to find out how to forecast non-household consumption. Use your own customer metering data, if you have them, to	Section 4.3 and Demand Forecasting Methodology

Category/guidance	What must/should I do?	Where can I get this information from?	References and other sources of guidance
	assumptions that you have based these on. You should make it clear how you have derived your data and the assumptions you have based your assessment on.	provide information about current consumption. You can base your consumption forecasts on your knowledge of your customers and customer surveys. You could also use data and assumptions from neighbouring water companies.	(UKWIR and NRA, 1995) and Forecasting Water Demand Components (UKWIR, 1997).
Metering and water efficiency	Water companies must meet the WRMP Direction, 2012 requirements in respect of metering and water efficiency. Water companies should meet Government expectations with regard to managing demand in areas of water scarcity or areas of high demand. Water companies should provide information and costs of current and future planned demand management measures and how these can be used to help manage the supply-demand balance. The Environment Agency expects to see evidence showing the cost of **both baseline and future planning options**. These could be over and above the measures taken to meet Ofwat's water efficiency requirements. A company's water efficiency policy should provide a framework to achieve its statutory duty to promote the efficient use of water. This will include delivery of the company's current metering programme and implementation of	The WRMP Direction 2012. The WRPG – Guiding Principles (Appendix) provides an explanation of the Directions. WRPG – Guiding Principles (pages 4-11) Your own water efficiency and metering programmes.	Section 4.2.5.2

Category/guidance	What must/should I do?	Where can I get this information from?	References and other sources of guidance
	current demand management initiatives. A company's baseline forecasts should include savings that arise from its existing water efficiency policies up to 2015. Beyond that, companies should factor in savings associated with continuing to meet their statutory duty to promote water efficiency.		
Climate change	You must follow the requirements of the WRMP Direction, 2012 in respect of climate change. You should consider the impact of climate change on baseline demand at a resource zone or water company level, depending on the water resources situation of your company. Our investigations have shown that the impact of climate change on water consumption is uncertain at the present time and that other factors are likely to have a larger effect. You should, therefore, make an allowance for the impact of climate change on the demand for water based on the current methods available. We expect this to be a small percentage of the consumption for both household and non-household use.	The WRMP Direction 2012. The WRPG – Guiding Principles (Appendix) provides an explanation of the Directions. Climate Change and the Demand for Water (DoE, 1996; Downing et al., 2003) provides some guidance for demand in different industrial sectors.	Section 4.2.5.2 and Climate Change and the Demand for Water (DoE, 1996; Downing et al., 2003)

Category/guidance	What must/should I do?	Where can I get this information from?	References and other sources of guidance
	You should make it clear how you have derived your data and the assumptions you have based your assessment on.		
Leakage	Leakage of water from a company distribution network can form a significant component of demand for water. As part of your demand forecast, you should estimate your baseline leakage over the next 25 years. Where you have identified a supply-demand deficit, you should consider proposed options to reduce leakage as part of the options appraisal process. You should make it clear how you have derived your data and the assumptions you have based your assessment on.	Check the WRPG - technical methods and instructions to find out how to assess and forecast leakage.	Section 4.4
3.5 Target headroom			Technical Guideline: Section 5 a buffer on the supply and demand forecast - target headroom
Target headroom	You should account for the uncertainty of your estimates for supply and demand, within your target headroom. You should make it clear how you have derived your data and the assumptions you	If you do not have a supply-demand deficit in any planning year, we expect that the 1998 headroom methodology (A practical method for converting uncertainty into headroom, UKWIR, 1998) would be the most appropriate methodology to use.	Section 5.0 and A practical method for converting uncertainty into headroom, UKWIR, 1998

Category/guidance	What must/should I do?	Where can I get this information from?	References and other sources of guidance
	have based your assessment on.	If you do have a supply-demand balance deficit, you should consider using the 2002 headroom methodology - An improved methodology for assessing headroom - final report UKWIR, 2002. If your supply comes from a bulk supply agreement from a donor company, check your bulk supply arrangement. It is likely that you will only need to account for the accuracy of supply-side data in the supply-side element of your headroom estimate.	and An improved methodology for assessing headroom - final report UKWIR, 2002.
3.6 Options appraisal			Technical Guideline: Section 6 - the balancing act and will a company need investment?
When to include an options appraisal	Decide whether you need to do an options appraisal.	Check section 6.0 of the WRPG - technical methods and instructions for guidance on whether you need to do an options appraisal.	Section 6.0
Metering	You must follow the WRMP Direction, 2012 in respect of metering.	The WRMP Direction 2012. The WRPG – Guiding Principles (Appendix) provides an explanation of the Directions.	
Unconstrained list	You should detail an unconstrained list of all the options you could consider. You should make it clear how you have derived your unconstrained list and the assumptions you have based them on.	Check the WRPG - technical methods and instructions to find out how to generate an unconstrained list of options.	Section 6.4
Feasible list	You should detail the assumptions and criteria	Check the WRPG - technical methods and instructions to find	Section 6.5 and

Category/guidance	What must/should I do?	Where can I get this information from?	References and other sources of guidance
	you have used to filter your unconstrained list to a more pragmatic, feasible list of options. You should include a detailed description of each feasible option. Your feasible list should include a combination of supply and demand management options. You should provide, as a minimum, average incremental costs and average incremental social costs for each option. You should detail the methodology you have used to quantify the environmental and social costs and benefits (including the cost of carbon) as well as the financial costs and benefits. You should detail all the assumptions you have used to generate your figures and the basis for these assumptions.	out how to generate a feasible list of options. You should generate your feasible list by filtering out options from your unconstrained list based on some basic assumptions of feasibility. You could check how neighbouring water companies have done this to see how they have approached it. The economics of balancing supply and demand (Environment Agency and UKWIR, 2002) contains guidance on determining feasible options. You may be able to use some of the costs and assumptions of neighbouring water companies in your assessment Table 6.1 in section 6.5.3 of the WRPG - technical methods and instructions provides further references for cost data.	The economics of balancing supply and demand (Environment Agency and UKWIR, 2002), The economics of demand management (Environment Agency and UKWIR, 1996) and the Benefits Assessment Guidance (Environment Agency, 2002)
Greenhouse gas emissions	You must follow the WRMP Direction, 2012.	The WRMP Direction 2012. The WRPG – Guiding Principles (Appendix) provides an explanation of the Directions.	
Least cost solution	You should appraise your feasible options to identify, in the first instance, a least cost solution. This least cost solution should take account of	Section 6.6 of the WRPG - technical methods and instructions provides further references to the appraisal of feasible options. The economics of balancing supply and demand	Section 6.6 and The economics of balancing supply and demand (Environment

Category/guidance	What must/should I do?	Where can I get this information from?	References and other sources of guidance
	the environmental and social costs of your feasible options where these can be monetised, as well as the carbon costs. The environmental (and social) impacts of feasible options that cannot be monetised may be used to influence your choice of solution in the next stage of the process. The cost of your least cost solution must be based on utilisation.	(Environment Agency and UKWIR, 2002) contains guidance on options appraisal.	Agency and UKWIR, 2002).
Programme appraisal, Strategic Environment Assessment and Habitats Regulation Assessment consideration of costs and benefits that cannot be monetised.	If your supply is via a bulk supply agreement only, you will not need to do an HRA or SEA. Impacts on the environment of a proposed option can be difficult to monetise but should be incorporated into how you decide on your preferred programme of options. There are two specific processes that help ensure the environmental requirements of a proposed plan are correctly assessed. These are Habitats Regulations Appraisal (HRA) and Strategic Environmental Assessment (SEA). These additional assessment environmental frameworks are derived from European legislation and as a competent authority, you are responsible for deciding whether to apply them to your plan.	Check section 6.7 of the WRPG - technical methods and instructions for further details. You may be able to use some of the costs and assumptions of neighbouring water companies in your assessment.	Section 6.7 and Strategic Environmental Assessment and Habitats Regulations Assessment - Guidance for Water Resources Management Plans and Drought Plans (UKWIR, 2012)

Category/guidance	What must/should I do?	Where can I get this information from?	References and other sources of guidance
	Both processes help ensure the environment is considered when developing a plan. The water resources management plan process does cover many aspects but as the two processes have legal standings, they must be considered explicitly. The processes can be integrated to reduce duplication.		
Preferred solution	You should detail the selection methodology you have followed in selecting your preferred solution and clearly justify your preferred solution. You should make it clear how you have derived your data and the assumptions you have based your assessment on. The cost of your preferred solution must be based on utilisation.	Section 6.8 of the WRPG - technical methods and instructions provides further details. The economics of balancing supply and demand (Environment Agency and UKWIR, 2002) contains guidance on determining the preferred solution.	Section 6.8 and The economics of balancing supply and demand (Environment Agency and UKWIR, 2002).

Category/guidance	What must/should I do?	Where can I get this information from?	References and other sources of guidance
3.7 Water resources planning tables			
Which tables should I submit?	You should provide all the tables necessary in Excel format by following the guidance on the WRP tables	You should populate your tables based on all the data that you have compiled in assessing your supply-demand balance. Section 1.2 provides the general guidance relating to producing WRP tables. Sections 2-5 provide the specific guidance relating to each table. Companies should publish the necessary WRP tables to support their plan.	Section 1.2 Sections 2-5 of the Water resources planning guideline - Technical instructions for the water resources planning guideline supply-demand tables

Please note: methodologies produced by the United Kingdom Water Industry Research (UKWIR) cannot be downloaded for free from the internet but are available from their website at a cost.

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