

Water Resources Management Plan

Strategic Environmental

Assessment

Non Technical Summary to the
Environmental Report

February 2008

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Introduction

Hyder Consulting Ltd. was appointed by Dwr Cymru Welsh Water (DCWW) to carry out a Strategic Environmental Assessment (SEA) of the Water Resources Management Plan (WRMP).

The water industry, through UK Water Industry Research Ltd (UKWIR), recognises that WRMPs may be subject to a SEA under the requirements of the European Directive 2001/42/EC “on the assessment of effects of certain plans and programmes on the environment” (the SEA Directive). The SEA Directive has been transposed into UK legislation as Regulations. For Plans that cover both Wales and a part of England (as is the case with DCWW’s WRMP), both the Welsh and English Regulations apply, i.e. the Environmental Assessment of Plans and Programmes Regulations 2004 (Statutory Instrument 2004, No. 1633) and the Environmental Assessment of Plans and Programmes (Wales) Regulations 2004 (Welsh Statutory Instrument 2004, No. 1656(170)), known hereafter as the SEA Regulations.

DCWW have, therefore, chosen to undertake a SEA to ensure that environmental issues are considered throughout the development of the WRMP.

In accordance with the Environmental Assessment of Plans and Programmes Regulations 2004, an Environmental Report detailing the SEA process has been prepared. This Non-Technical Summary provides a summary of information provided in the Environmental Report.

The overarching objective of an SEA is “to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation of plans and programmes with a view to promoting sustainable development” (European Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment).

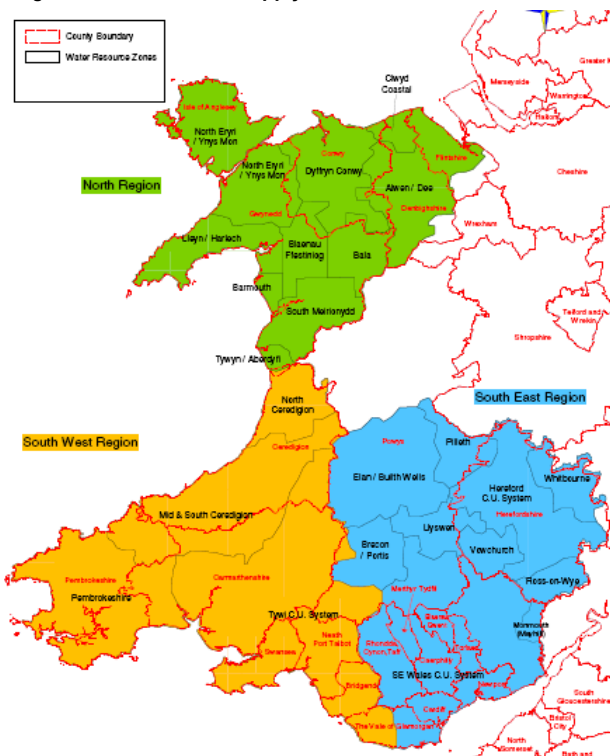
SEA is a decision support tool, providing information on the environmental effects of the WRMP. The output of the SEA process informs both the Plan makers and interested parties of possible significant environmental effects (both positive and negative) of the Plan and its reasonable alternatives. The full findings of the SEA are presented in the Environmental Report.

The DCWW Water Resources Management Plan

The Water Act 2003 introduced a statutory requirement for water companies to prepare, publish and maintain water resource management plans (also known as water resources plans) into the Water Industry Act 1991. These new provisions are contained in sections 37A to 37D of the Water Industry Act and came into force in April 2007.

The DCWW WRMP will outline how DCWW will maintain the balance between water demand and supply for the 25 years (up to 2034/35) following publication of the Final WRMP in order to meet the water supply needs of its customers. The WRMP for DCWW will cover all of DCWW’s water supply area, which covers the majority of Wales and a small area in England as shown in Figure A below.

Figure A: DCWW Water Supply Zones



The water resources management planning process requires the completion of a variety of studies to establish the supply and demand balance in water supply within all the DCWW zones. Where deficits are identified, potential options are drawn up through which a balance between supply and demand can be achieved.

To arrive at the options detailed in the WRMP, a range of demand and supply forecasting calculations were carried out. These calculations highlighted those zones that are, or are predicted to fall into, deficit i.e. demand for water will be higher than available supply. A wide range of supply and demand management options were then considered to offset the determined deficit for each zone. These options are referred to as the *Unconstrained Options*. These unconstrained options were screened to arrive at a list of *Feasible/Constrained Options*. Costing calculations of the feasible options were carried out to inform the selection of the *Preferred Options*.

The submission date for the draft WRMP is in March 2008. Consultation is a key component of the water resource management planning process and DCWW will be inviting comment on the WRMP at various stages in the process.

The SEA Process

The overall objective of SEA is to “...provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation of plans and programmes with a view to promoting sustainable development” (SEA Directive).

The SEA for the WRMP has been undertaken in a number of stages as shown below:

- **Stage A** – Setting the context and objectives, establishing the baseline and deciding on the scope;
- **Stage B** – Developing and refining alternatives and assessing effects;
- **Stage C** – Preparing the Environmental Report;
- **Stage D** – Consulting on the draft plan or programme and the Environmental Report; and
- **Stage E** – Monitoring the significant effects of implementing the plan or programme on the environment.

The Environmental Report is the key output of the SEA process. It details the SEA process for the WRMP and presents information on the effects of the Plan. The Report has been prepared according to European and UK Guidance.

Stage A: Policy Context, Environmental Baseline and Key Issues

A number of policies and plans have been identified and reviewed that set out a range of environmental themes (e.g. water, climate change, biodiversity, landscape, sustainable development, heritage, tourism, health and well-being). Environmental baseline data has also been collected in order to establish trends and the current state of the environment. This review highlighted key issues relevant to the WRMP and these relate to the following:

- Predicted rise in population;
- Condition of designated protected areas (e.g. Sites of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs) Special Areas of Conservation (SACs));
- Water quality in some rivers;
- Climate change;
- Seasonal variations in both groundwater and surface water flows;
- Landscape character;
- Supply network losses and overall water demand; and
- Energy usage.

Stage B: Assessing the WRMP

SEA Objectives

The SEA objectives were the key output of Stage A. The objectives provide a framework for assessing and improving the environmental performance of the WRMP; ensuring maximum synergy with existing policies and plans. The final SEA objectives are as follows (not in any order of priority):

1. Protection and enhancement of biodiversity, key habitats and species
2. Protection and enhancement of the cultural, historic and industrial heritage resource
3. Protection and enhancement of the quality and quantity of the surface water environment and the groundwater resource
4. Reduction in the risk of flooding

5. Ensuring the appropriate and efficient use of land
6. Limiting the causes, effects of, and adapting to climate change
7. Ensuring sustainable use of water resources
8. Protection and enhancement of landscape character
9. Protection and enhancement of human health

- Resource Management - direct river abstraction, reservoir storage, groundwater boreholes, seawater desalination
- Distribution Management - leakage detection and reduction

The assessment of option categories indicated that Customer Side Management and Distribution Management options are the preferred solutions to meeting identified deficit in water resources in terms of environmental effects.

The Assessment Findings

The SEA of the WRMP was undertaken in three stages:

- Assessment of Option Categories
- Assessment of Feasible Options
- Assessment of Preferred Options

Option Categories

A generic assessment was undertaken to provide an initial screening of those option types that are likely to have significant environmental effects, irrespective of location. Option types were as follows:

- Customer Side Management - water saving devices, targeted water conservation information, customer metering
- Production Management - wastewater recovery, water treatment works upgrade, bulk transfers transferring water resources from another water company area and conjunctive uses (better use of the system for instance by linking mains, improved operational use or transfer of water between zones)

Feasible Options

The assessment of Customer Side Management and Distribution Management Options involved a comparison of options against the SEA objectives.

Overall, the performance of the Customer Side Management (water efficiency options) was considered positive. The assessment of Distribution Management options (Active Leakage Control and Mains Replacement) determined that they do not conflict significantly with the SEA objectives. The only conflict identified for both Customer-side Management and Distribution Management options is in relation to climate change. There will be emissions generated from the vehicles used to conduct home visits, distribute water butts etc. and works related to active leakage control.

The use of Geographical Information Systems (GIS) data allowed for a more detailed assessment of the Production and Resource Management Options. In carrying out this assessment, it was possible to develop a tiered list of options. This list was developed based on the consideration of feasible options against the environmental criteria linked to the SEA objectives (See Table B below). An indication of the likely environmental effects was also provided.

Key to Table B

Tier	Comments
1	No significant effects
2	The option could possibly be within Tier 1, but more information is required to guide the assessment.
3	A significant environmental effect is possible
4	Option has potential significant environmental effects and there is a strong conflict with one or more of the SEA objectives. It is not considered that the option is appropriate as impacts are unlikely to be able to be mitigated.

Table B: Tiered List of Production and Resource Management Options for each WRZ Likely to be in Deficit

Option	Tier
N Eryri / Ynys Mon	
Connect Afon Rhythallt to Llyn Cwellyn	2
New Crug WTW and utilisation of existing Afon Rhythallt source	2
Utilisation of abstraction from Afon Seiont – upgrade Mynydd Llandegai	2
Upgrade of Mynydd Llandegai WTW – Ffynnon Llugwy abstraction	3
Upgrade of Mynydd Llandegai WTW – Marchlyn Bach abstraction	3
New abstraction at Llyn Cowlyd and upgrade Mynydd Llandegai WTW	3
New abstraction at Llyn Cowlyd – new WTW	3
Increase abstraction at Llyn Cwellyn	3
Dam raising Ffynnon Llugwy	3
Desalinisation North Eryri / Ynys Mon WRZ	4
Clwyd Coastal	
New abstraction at Afon Elwy to Glascoed WTW	1
Recirculation at Glascoed WTW	1
Treatment improvements to remove losses at Trecastell WTW	1
Upgrade pumping station at Llannerch boreholes	2
Llyn Bran transfer to Llyn Aled, with licence variation at Bryn Aled	3
Zonal transfer from Alwen-Dee using Ashgrove source works	3
Desalinisation Clwyd Coastal WRZ	4
Zonal transfer from Cowlyd, Dyffryn Conwy WRZ	4
Alwen Dee	
Upgrade Alwen WTW	1
Bankside Storage, River Dee	2
Reinstate Llyn Bran with new WTW	2
Utilisation of Ashgrove licence	3
Zonal transfer from Cowlyd, Dyffryn Conwy WRZ	3
Dam raising at Llyn Brenig with transfer aqueduct to Alwen Reservoir	4
Desalinisation Alwen-Dee WRZ	4
Bala	
Increase abstraction licence and upgrade Llidiardau WTW	3
Tywyn Aberdyfi	
New groundwater abstraction to feed Pen y Bont	2
New abstraction from Afon Dyfi	3
New abstraction from Afon Dysynni at Pont y Garth (to Pen y Bont WTW)	3
Pipeline to Abergynolwyn (Afon Dysynni pumped to Afon Fathew)	3
Desalinisation Twyn Aberdyfi WRZ	4
South Meirionydd	
Upgrade Penycefn WTW	1
Vowchurch	
Licence Variation at Vowchurch for Peak Week	1
Pumped storage reservoir adjacent to the River Dore (winter fill)	1
Upsize trunk main (from Hereford)	1
New groundwater abstraction from same aquifer	2

Preferred options

Complex optimisation (including yield assessments) of the feasible option set was carried out by DCWW to determine the preferred options. This process took into consideration the likely social, environmental and carbon impacts of the options. The results from this optimisation process and the SEA were used by DCWW to select the preferred options for the WRMP.

Based on the outcome of the optimisation process, in some instances options allocated to Tiers 3 and 4 in the assessment of feasible options (Table B) were selected over options in Tiers 1 and 2 (e.g. 'Upgrade of Mynydd Llandegai WTW – Marchlyn Bach abstraction' was selected instead of 'Utilisation of abstraction from Afon Seiont – upgrade Mynydd Llandega'i in the North Eryri / Ynys Mon WRZ).

With this in consideration, the preferred options that form the planning solution were assessed to a further level of detail than the feasible options set. A matrix-based approach was used in carrying out this assessment. Each of the options was considered

against the SEA objectives to determine their likely environmental effects, including the significance, timing and spatial scale of these effects.

The assessment of preferred options was the most iterative as the findings were used by DCWW to 'fine tune' their list of preferred options. The findings of the assessment of each option were fed back to DCWW to inform the selection of the preferred solution for each zone in deficit.

The final list of preferred options consisted of Distribution Management, Customer-side Management, Resource Management and Production Management options. All of the preferred options were assessed in more detail as mentioned above with the exception of Water Efficiency options (capacity buy back options in Tywyn/Aberdyfi and South Meirionnydd WRZs) as these options do not have a spatial element.

The findings of this element of the assessment are shown in Table C below.

Table C: Key findings of the Assessment of Preferred Options

Option	Key findings
North Eryri / Ynys Mon	
Leakage Option	<p>There are six SSSIs within the WRZ that are identified as being at risk from abstraction / flows that could benefit from reduced water losses. Other positive effects relate to:</p> <ul style="list-style-type: none"> • water quality and quantity • reduced flood risk in the local area. • sustainable use of water, as active leakage control will reduce the amount of losses from the water supply network. • reduced possibilities for water contamination.
Upgrade of Mynydd Llandegai WTW - Marchlyn Bach abstraction	<p>Potential negative effects identified relate to:</p> <ul style="list-style-type: none"> • designated sites, as the option would physically allow an existing abstraction to be increased by increasing pipe diameter (although the option would not increase the abstraction beyond what is currently licensed) and could, therefore, have a potentially negative impact on the Eryri SAC and SSSI. • land use, as the pipeline would be constructed in a sensitive area, within a SAC and SSSI. • climate change as, although the energy requirements for this option are low compared to other options within the zone, energy is still required for construction and operation of the option. <p>The option would ensure the continuity of supply and will therefore assist in the protection of human health.</p>
Clwyd Coastal	
Leakage Option	<p>There are two SSSIs identified as being at risk from abstraction / flows that could benefit from reduced water losses. Other positive effects relate to:</p> <ul style="list-style-type: none"> • water quality and quantity • reduced flood risk in the local area. • sustainable use of water, as active leakage control will reduce the amount of losses from the water supply network. • reduced possibilities for water contamination.

Option	Key findings
Alwen / Dee	
Leakage Option	<p>There are five SSSIs identified as being at risk from abstraction / flows that could benefit from reduced water losses. Other positive effects relate to:</p> <ul style="list-style-type: none"> • water quality and quantity • reduced flood risk in the local area. • sustainable use of water, as active leakage control will reduce the amount of losses from the water supply network. • reduced possibilities for water contamination.
Bala	
Leakage Option	<p>There is a SSSI identified as being at risk from abstraction that could benefit from reduced water losses. Other positive effects relate to:</p> <ul style="list-style-type: none"> • Water quality and quantity • reduced flood risk in the local area. • sustainable use of water, as active leakage control will reduce the amount of losses from the water supply network. • reduced possibilities for water contamination.
Tywyn / Aberdyfi	
Leakage Option	The zone has a large area covered by conservation designations, although none are identified as being at risk from the effects of abstraction. Positive effects in relation to biodiversity can be expected.
New Groundwater abstraction to feed Penybont	The assessment did not identify any potential significant effects, other than in relation to climate change. Due to the nature of a groundwater abstraction, it is considered that there could be some potential negative effect on groundwater quality and quantity. It should be noted that there is a level of uncertainty in the assessment.
South Meirionydd	
Leakage Option	The zone has a large area covered by conservation designations and therefore the positive effects on the biodiversity objective could be particularly significant.
Vowchurch	
Upsize Trunk Main (from Hereford)	The assessment highlights that, although the option will require increased abstraction from the River Wye SAC, the volumes involved are very small and are within the existing abstraction licence. The only negative effect for the option is in relation to energy required for pumping. As such, the option is likely to have effects in relation to the climate change objective.

Mitigation or Enhancement of Potential Significant Effects

The list of preferred options consists mainly of Customer Side Management and Distribution Management options. These options were generally determined to have likely significant beneficial environmental effects. As such, efforts will need to be made to minimise the limited negative effects identified and enhance the beneficial effects. It is likely that the most appropriate way to achieve this would be through careful management of delivery.

Only three of the preferred options are Production and Resource Management options. Mitigation of identified adverse environmental effects will mostly require mitigation at scheme level, through project environmental assessments.

Appropriate Assessment

Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the Habitats Directive) requires an Appropriate Assessment to be undertaken to assess the impacts of land use plans against the conservation objectives of European sites in order to determine whether it would affect the integrity of the site.

The findings of this SEA will assist the DCWW, as a Competent Authority, to assess the requirement for an Appropriate Assessment. Further consideration of cumulative and secondary effects of the Options and their interaction with designated sites are likely to be appropriate as part of any Appropriate Assessment undertaken.

Stage D: Consultation Provisions

The Environmental Report is the vehicle for the final consultation exercise in this SEA process.

At this stage in the process, consultation has the following aims:

- To enable stakeholders to comment on any concerns regarding the direction and potential environmental effects of proposals in the WRMP;
- To enable stakeholders to comment and suggest amendments to the WRMP and the content/ findings set out in the Environmental Report;
- To comply with the statutory requirements which require consultation with statutory consultees (Countryside Council for Wales, Cadw, Environment Agency, Natural England, English Heritage);
- To ensure that the proposals in the WRMP are understood, agreed and can thus be implemented with the support of key stakeholders, local people and special interest groups.

Comments are invited on the contents of the Environmental Report. In particular consultee views are invited in relation to the following:

- Question 1: Do you agree with the findings of the assessment of the various elements of the WRMP?
- Question 2: Is the proposed monitoring framework appropriate for monitoring the effects of the WRMP options on the environment?

Stage E: Monitoring

Monitoring is expected to draw heavily on existing monitoring programmes (or proposed monitoring programmes) undertaken centrally by the Welsh Assembly Government, and other organisations (Countryside Council for Wales, Natural England and the Environment Agency for example), rather than set out to collect a full set of plan specific data. There are a number of monitoring programmes underway or due to be in place in Wales in relation to or in support of the following:

- The Environment Strategy for Wales
- Water UK Sustainability Indicators
- Chemical and Ecological Monitoring of Rivers by the Environment Agency (GQA)
- Welsh Fisheries Programme, Environment Agency
- Water Framework Directive Monitoring

The proposed monitoring framework will need to be integrated with other monitoring that will be undertaken as part of the WRMP. As a part of this integration, responsibilities will be appointed to relevant organisations for data collection. It is necessary that the monitoring framework is updated and reviewed on an ongoing basis. Indicators and targets will need to be continually refined as new information becomes available.

Comments relating to the Environmental Report should be addressed to

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