Water Use

Supporting Guidance (WAT-SG-51)

Water Resource Licence Monitoring Plan Guidance

Version: v4.1

Released: Aug 2017

Copyright and Legal Information

Copyright© 2017 Scottish Environment Protection Agency (SEPA).

All rights reserved. No part of this document may be reproduced in any form or by any means, electronic or mechanical, (including but not limited to) photocopying, recording or using any information storage and retrieval systems, without the express permission in writing of SEPA.

Disclaimer
Whilst every effort has been made to ensure the accuracy of this document, SEPA cannot accept and hereby expressly excludes all or any liability and gives no warranty, covenant or undertaking (whether express or implied) in respect of the fitness for purpose of, or any error, omission or discrepancy in, this document and reliance on contents hereof is entirely at the user's own risk.

Registered Trademarks
All registered trademarks used in this document are used for reference purpose only.

Other brand and product names maybe registered trademarks or trademarks of their respective holders.

Update Summary

Version	Description
v1.0	First issue for Water Use reference using approved content from the following documents: *WAT-SG-51_WR Monitoring Guidance final to TI 170807.doc*
v2.0	New base template applied, links to docs revised for new SEPA website, Nov 2008
v3.0	Expired CMS links reviewed and updated.
v4.0	Revised to update links to *Standards Directions 2014*
v4.1	Footers and links revised and updated

Notes

References: Linked references to other documents have been disabled in this web version of the document. See the References section for details of all referenced documents.

Printing the Document: This document is uncontrolled if printed and is only intended to be viewed online.

If you do need to print the document, the best results are achieved using Booklet printing or else double-sided, Duplex (2-on-1) A4 printing (both four pages per A4 sheet).

Always refer to the online document for accurate and up-to-date information.

Table of Contents

1. Introduction

This document provides guidance to operators who are required to produce monitoring plans covering an abstraction and/or impoundment licensed under the Controlled Activities Regulations and SEPA staff who are involved in reviewing them. This guidance is intended to cover existing activities in operation prior to 1 April 2006. Separate requirements will be provided for new applications.

The purpose of a monitoring plan is to provide SEPA with information on the operation of the licensed abstractions and impoundments. This will allow SEPA to ensure that the operation of these activities comply with licence conditions and will provide information to allow SEPA to manage water resource demand within a water body.

The sectors that are required by their CAR licence to submit monitoring plans are:

- Hydropower
- Distilleries
- Canals
- Public Drinking Water Supplies
- Certain Industrial and Commercial Processes

Other sectors (such as agriculture and aquaculture) are not required to submit monitoring plans but individual sites within these sectors may be required at a future date to submit a monitoring plan where the abstraction is causing a significant environmental impact and a monitoring plan would be considered appropriate for the purpose above.

SEPA is seeking as simple a monitoring plan as possible. The size and complexity of the monitoring plan will vary between sites. A template is provided in *WAT-TEMP-68: Water Resource Monitoring Plan Licence Template*.

SEPA has developed specific monitoring guidance for the distillery sector (*WAT-SG-52: Water Resource Licence Monitoring Plan Guidance - Distilleries*), which should be read in conjunction with this guidance.

2. Background

SEPA has a duty under the Water Environment and Water Services Act (Scotland) 2003 to ensure compliance with the objectives of the Water Framework Directive 2000/60/EC which include:

- prevent deterioration of, and protect and enhance the water environment;
- promote sustainable water use; and
- contribute to the mitigation of floods and droughts.

In order to deliver these obligations, SEPA will use environmental standards[1] developed by UKTAG (UK Technical Advisory Group) which define the proportion of river flows which can be abstracted without risking environmental harm. Where existing abstractions or impoundments exceed the good status standards, SEPA will aim to manage abstraction levels through regulatory measures to ensure compliance with the good status standards provided it is technically feasible and proportionate to do so. Where existing abstractions comply with the UKTAG standards, SEPA will manage the available capacity[2] in a way that maximises its potential use and will protect the resources required by existing operators.

SEPA needs accurate information on how abstractions vary with time in order to allow the modelling of river flows and thereby to determine whether a water body complies with the environmental standard. For the same reason, SEPA needs information on compensation flows from reservoirs.

1. The full set of Standards Directions for each river basin district in Scotland can be found in the Standards Directions 2014

2. The available capacity is the difference between the existing proportion of flow abstracted and that permitted by the UKTAG environmental standards.

3. Monitoring Plan Requirements

A water resources monitoring plan should set out the operator's proposals on the location and method of recording licensed flows for approval by SEPA. The monitoring plan should include details of all existing monitoring facilities and proposals for new flow monitoring where identified.

The operator will need to consider how the flow monitoring and data recording at any site is able to demonstrate licence compliance and capture the total water use such that the environmental impact can be evaluated.

The plan should explain how the operator will record flows and submit this information to SEPA.

3.1 What is required in a Monitoring Plan?

A template monitoring plan has been provided in *WAT-TEMP-68: Water Resource Monitoring Plan Licence Template* and the section headings are outlined below. Please refer to the template for more detailed guidance under each section.

- Summary of the number and location of licensed activities including abstraction/compensation/discharge volumes and water source;
- Site water usage description and referenced site plan
- Description of each abstraction, impoundment, discharge activity including associated structures, frequency of operation and any existing flow measurement;
- Flow measurement proposals for any activities that do not have a suitable existing monitoring facility.

Examples illustrating different site monitoring scenarios are given in *Annex I*.

3.2 What type of monitoring and recording will SEPA require?

SEPA is seeking to keep the costs of flow measurement requirements to a minimum consistent with meeting our needs. For example:

1. If the abstraction intake is fixed such as a fixed rate pump or pipe or channel that the flow cannot be altered then the abstraction structure can be calibrated and flows calculated. Under some circumstances no further measurement or recording may be required.
2. If the abstraction intake can be adjusted but only to a limited degree – then the structure can be calibrated and flows derived. A record can then be kept of the position of the intake structure.
3. Where abstraction rates change in a predictable manner (for example according to river levels) then the calibration of the structure may be sufficient to determine flows.

4. If there is an alternative method of measuring the abstraction by measuring the output of the process then this can be used as a surrogate for measuring flows (e.g. energy production at hydropower sites).

Notes

- Where SEPA considers that the abstraction causes a serious environmental impact, continuous flow monitoring may be required even if bullets 1 to 4 above apply.
- Where the operator already has continuous flow monitoring installed, SEPA will expect the operator to submit data returns obtained from the continuous flow monitors.
- Operators may choose to install continuous flow monitors (even if bullets 1 to 4 above apply) to improve the efficiency of their process or to demonstrate a lower usage thereby incurring a lesser subsistence charge from SEPA.

Portable flow meters can be used to calibrate fixed flow structures or operations that are proposed as a surrogate for direct flow measurement. SEPA may consider the use of portable metering from operators with multiple sites or sites with fixed production water usage to reduce the outlay of capital expenditure in the short term. Other benefits would be the opportunity to confirm the relationship between water usage and production volumes.

SEPA wishes to focus resources in the first River Basin Planning cycle upon those abstractions which pose a high risk to the water environment. Consequently, SEPA will require a continuous record of flows if the abstractions from a site fall within a water body at risk of failing the relevant UKTAG environmental standards (either High Status or Good Status). This requirement may be provided by the methods described under bullets 1 to 4 above or continuous flow monitoring may be required.

SEPA will provide information to operators on whether their site has been identified as within a water body at risk of failing good status.

SEPA is determined only to impose costs which are proportionate to the environmental risks and which are reasonable when considered in the context of operating and maintenance costs.

3.3 Flow monitoring structures

There are a number of ways of providing for flow monitoring facilities. The method selected will be dependant on the nature and means of the abstraction or compensation flow. For further information please refer to *WAT-SG-54: Technical Guide to Flow Measurement*.

SEPA may wish to audit operator's estimates or measurements of flow. Consequently, SEPA needs access to measure flows at a point which represents the volume abstracted. This may be at the abstraction point or at the site or potentially after the use and before discharge. It is critical that the monitoring point represents the flow at the point of abstraction. Flows cannot be measured at the site if there is leakage between the abstraction point and the site. Flows cannot be measured at the discharge point if water is lost during its passage through the process.

Where provision of a representative flow measurement structure does not seem feasible at the identified location, operators should include an explanation of the practical difficulties, the potential costs and alternative proposals.

Annex I – Examples

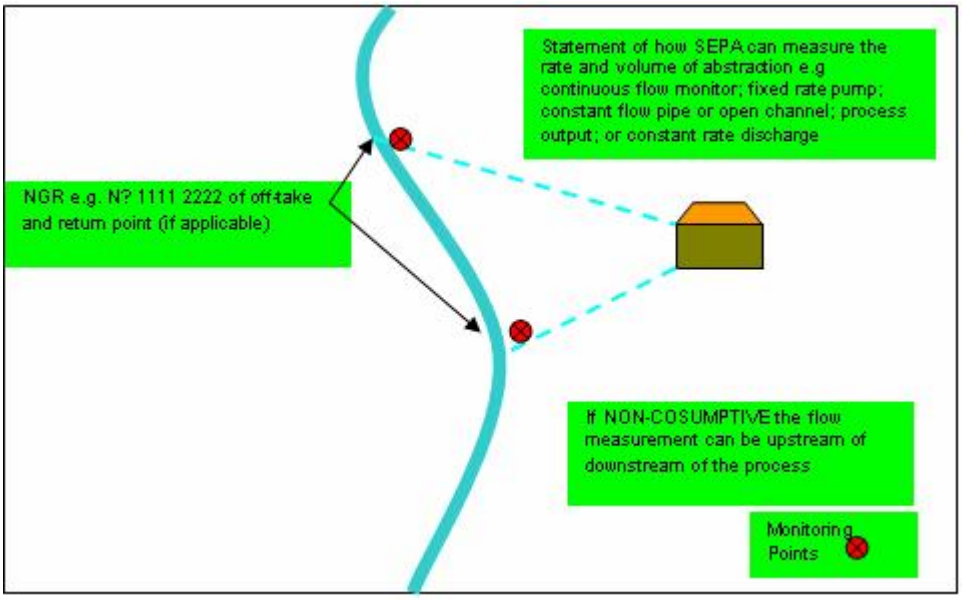
The following pages contain examples illustrating different site monitoring scenarios.

For specific guidance on monitoring for distilleries please refer to *WAT-SG-52: Water Resource Licence Monitoring Plan Guidance - Distilleries*.

Consumptive and Non-Consumptive Use

If the process is non-consumptive (i.e. that typically over 95% of the abstracted water is returned directly to the water environment) and from single point abstraction activity then the flow monitoring point can be either upstream or downstream (i.e. at the discharge) of the process (refer to *Diagram 1*). This is particularly relevant for those processes that have an authorisation from SEPA for their discharge and the authorisation has a flow monitoring condition. In such circumstances SEPA may accept the monitoring of the discharge flow as a substitute for the monitoring of the abstraction. However, if there is more than one abstraction point, discharge monitoring may not be acceptable method of monitoring the abstraction point in such cases please refer to the section on Multiple Abstractions below:

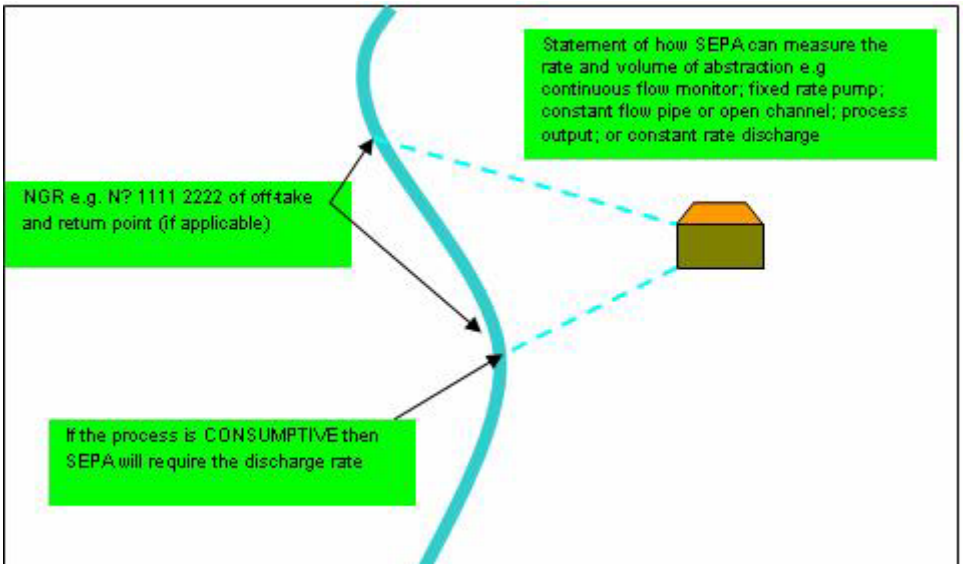
Figure 1 An example of a monitoring plan for a non-consumptive process with a single abstraction point



Where the process is partially consumptive (i.e. that typically between 10% and 95% of the abstracted water is returned directly to the water environment) or consumptive (i.e. that typically less than 10% of the abstracted water is returned directly to the water environment) and there is a discharge to the water environment, SEPA will require monitoring of the discharge point over and above monitoring of the abstraction point (refer to *Diagram 2*). SEPA will also accept monitoring of the discharge and the process as a surrogate measurement of the abstraction if it is representative of the abstraction and is the most viable option for the operator.

For further guidance on how to monitor the discharges please refer to *WAT-SG-54: Technical Guide to Flow Measurement*.

Figure 2 An example of a monitoring plan for a consumptive process with a single point abstraction



Multiple Abstractions

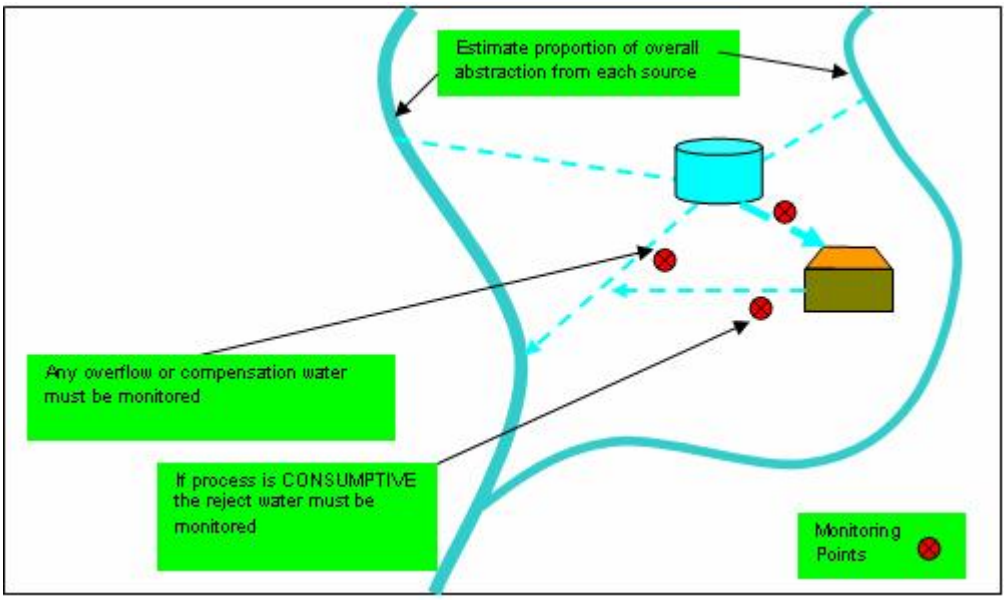
Where the process is served by multiple abstractions that are collected into one holding tank, pond, reservoir, aqueduct or pipe SEPA may accept monitoring of the outflow from the storage area into the process as a means of measuring the abstractions providing the following rules are met:

- That each of the abstractions behave in hydraulically predictable or controlled manner i.e. from a fixed intake or fixed pump;
- An estimate of the proportion of the flow from each source is submitted
- That any overflow or compensation is monitored or calculated by another means. (for example in *Diagram 3* rather than measure the overflow to the water environment it would be possible to estimate it based on the cumulative abstraction rate minus the amount used in the process).

> **NOTE** - SEPA will not require any overflow monitoring from a remote site. For example SEPA will not require overflow monitoring at any of the abstraction points A to E in Diagram 5, i.e. abstractions from small watercourses that are part of a much larger abstraction regime.

In assessing the monitoring of cumulative abstractions SEPA will consider whether there are significant impacts on individual water bodies which require dedicated monitoring.

Figure 3 Example of a monitoring plan for a partially consumptive process served by multiple abstractions from within the one catchment



Lades

Where the process is served by an abstraction from a lade SEPA will require information on the maximum abstraction rate from the river into the lade. Where the abstraction from the river to the lade is fixed i.e. no sluice or flow control structure, SEPA will require a calculation of the rate of maximum abstraction from the river to the lade. (The operator will still be required to submit monitoring of any abstractions from the lade to the process). For further information on distilleries please refer to *WAT-SG-52: Water Resource Licence Monitoring Plan Guidance - Distilleries*.

Figure 4 Example of a monitoring plan for a small run-of-river hydro scheme

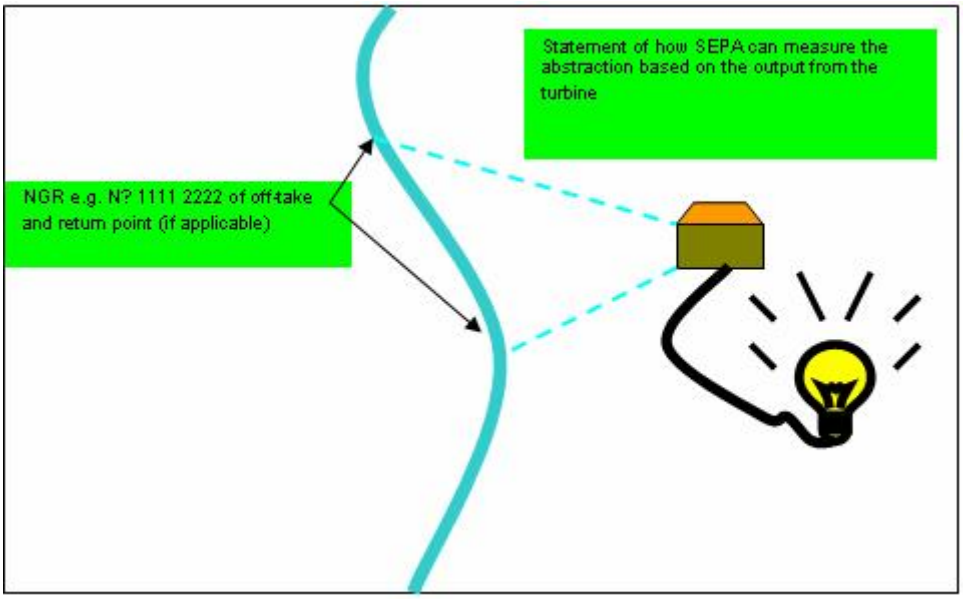
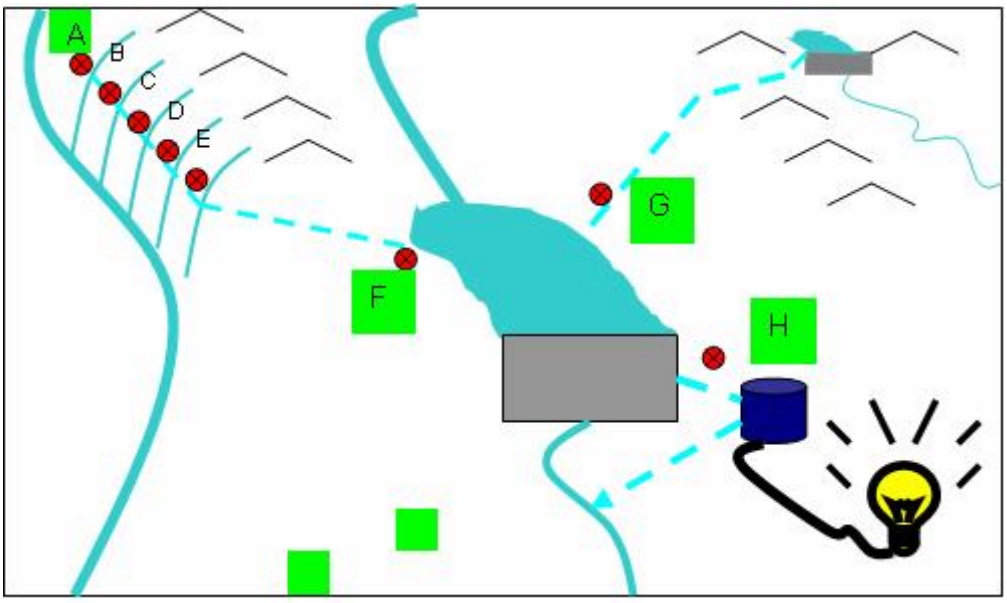


Figure 5 Example of a monitoring plan for a large scale hydro scheme with storage



In the example given above the hydro dam is served by a main river input supplemented by a feeder dam from another catchment and a pipe that is supplied by a series of small burns also from another catchment.

In such circumstances SEPA will require monitoring of inflow from the feeder dam (G). Although monitoring of each of the abstractions A to E is preferable, as all the burns run into one catchment SEPA will accept monitoring at Point F providing an estimation of the proportion of flow from each abstraction point is supplied.

SEPA will also require monitoring of the abstraction point from the reservoir to the process (H).

In certain circumstances such as where it is difficult for the operator to measure point H it may be preferable or more cost effective for the operator to monitor the inflow from the river and the compensation flow in order to demonstrate how much they are abstracting from the environment.

References

NOTE: Linked references to other documents have been disabled in this web version of the document.

See the Water >Guidance pages of the SEPA website for Guidance and other documentation (*www.sepa.org.uk/regulations/water/guidance/*).

All references to external documents are listed on this page along with an indicative URL to help locate the document. The full path is not provided as SEPA can not guarantee its future location.

Water Manual Documents

WAT-SG-52: Water Resource Licence Monitoring Plan Guidance - Distilleries

WAT-SG-54: Technical Guide to Flow Measurement

WAT-TEMP-68: Water Resource Monitoring Plan Licence Template

Standards

Standards Directions 2014

- The Scotland River Basin District (Surface Water Typology, Environmental Standards, Condition Limits and Groundwater Threshold Values) Directions 2014
- The Solway Tweed River Basin District (Surface Water Typology, Environmental Standards, Condition Limits and Groundwater Threshold Values) (Scotland) Directions 2014

NOTE: This link provides access to the documents via a managed SEPA intranet page.The full set of Standards Directions for each river basin district in Scotland can also be found via the Publications page of the Scottish Government website (www.gov.scot/Publications/)

- End of Document -