Bika Water LIMS

Sampling Rounds

Functional specification and use cases

Version 1.1, lemoene, 18 Nov 2022

1   Purpose of this document

This document is used to establish a common understanding of how Bika LIMS must meet the water quality lab's Sampling Round requirements. It focuses on the gap between current Bika functionality and lab requirements

The document serves as a functional specification for programmers working on the project, and as quality management tool during acceptance testing by lab representatives. The specification is also used to accurately quote on the customisations required

It is not uncommon that overlooked or additional functions are identified mid-project. These deviations are managed in a change control procedure after full technical analysis. It takes cost and time implications into account, and adjustments to the specification, budget, delivery and payment schedule

1.1   Document History

V 1.1   20 November 200   Adapted from old Bika 3 document

2   Overview

The aim of the design here is to automate as much as possible of the sampling process in the LIMS, per field trip or survey, ideally including automatic creation of Sample records, Packing lists, Worksheets for field results, and the use of preprinted barcodes created at Sample registration

Since Sampling Rounds are recurring events, e.g. weekly sampling of the same rivers and lakes, their creation can be automated by maintaining 'Sampling Round Templates' that will allow for 'one click' and error free individual Sampling Round creation

The Sampling Round is created with a number of default values collected from its Template but they can be overwritten should they differ

The Samples created by the Round are put in a Batch and linked to the Round. The Samples then go through their configured workflow and can be managed in the Batch where they inherit other Batch functionality
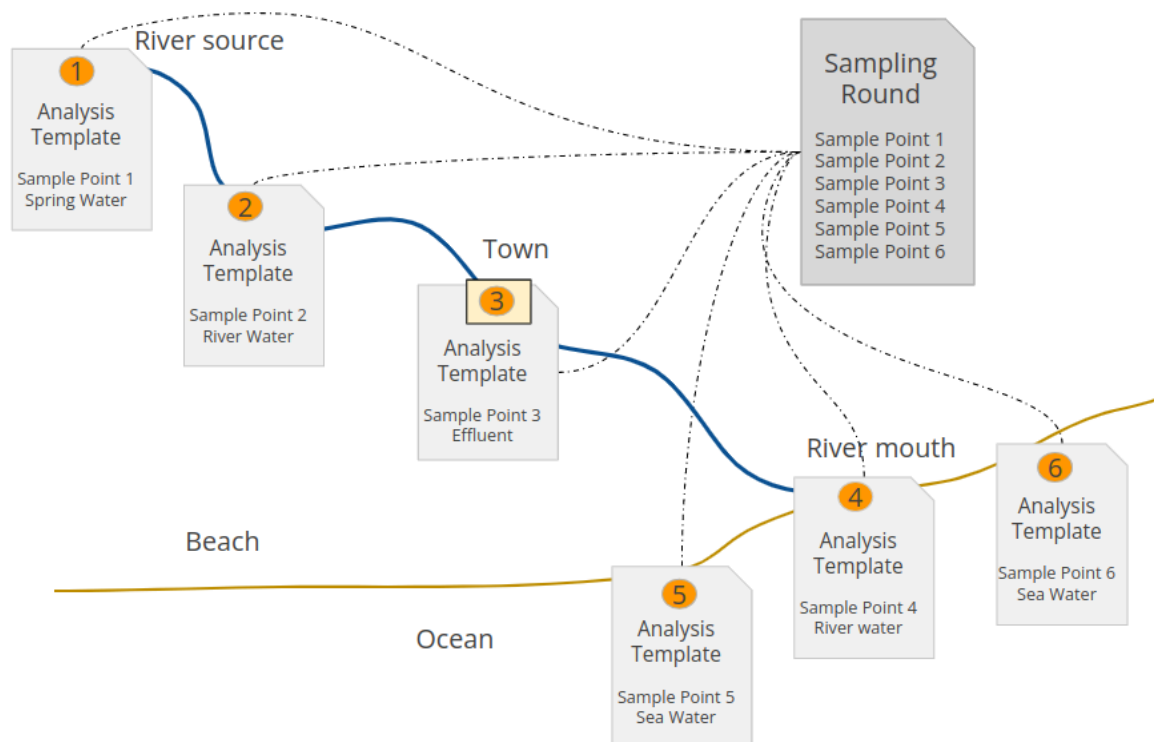
The

3   Not in the Scope. Scheduling Sampling Rounds

Rather than rewriting a scheduling engine, an interface to a web based calendar, like Google's, be considered. Phase II

4   Sampling Round Templates. SRTs

Sampling Round Templates (SRTs) are created as collections of Sample Templates, each set up earlier for the Sample Points to be included and from where the eventual Round's Sample records will be constructed

SRTs may be deactivated but never deleted

4.1   Sample Templates

The use case assumes that Sample Templates have been created and typically include values for:

Sample Point

Sample Type

Partitions and their containers and pre-preservations

Composite Y/N

Field Analyses

Lab Analyses

4.2 Packing slip, checklist

No expenses spared, a packing list document can be made up and saved per SRT, of field equipment & supplies needed:

Containers

Preservations

Instruments, Backup batteries

Cooler box, Ice

Field forms

Garbage bags

Paper Towel

Rubber boots, Gloves, Face masks

Field Test Worksheet

## 4.3 Field Test Worksheet

(New) Worksheets can be made up of Field tests and printed to take with or captured on a tablet where connectivity exists

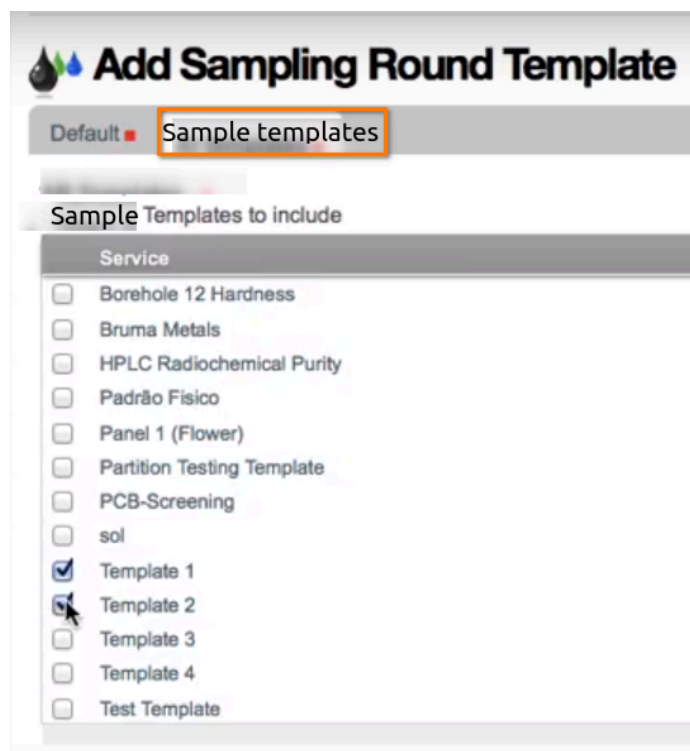## 4.4 Use Case. Creating a Sampling Round Template

Use case. Creating a Sampling Round Template

Role players. Lab manager

1. The SRT is created in a global list or a Client's folder, like their Sample Points and Profiles at the moment
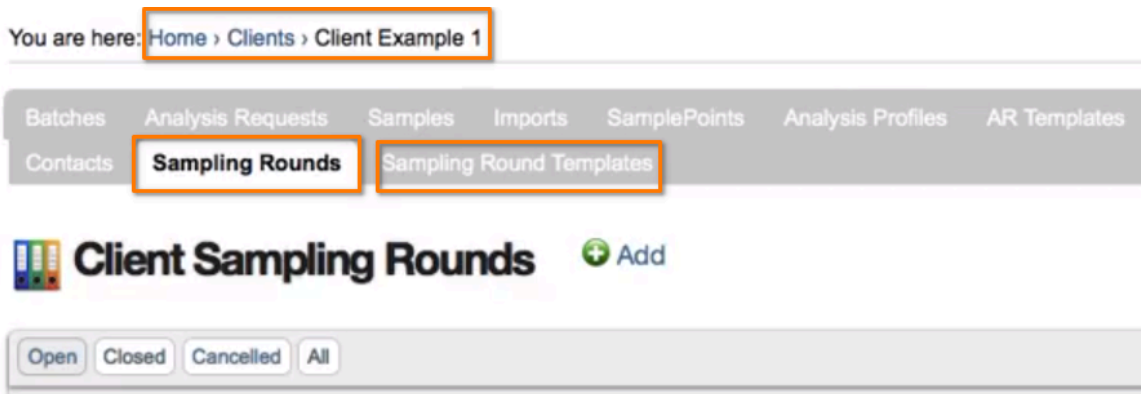
2. The user clicks [add] to create a new template, or on an existing one to edit it

3. The user edits the Default tab's fields:

> Title – a short name for easy identification on lists and drop-down menus

> Description – a 'long name' with more information. This texts is also displayed upon a mouse-over of the Title field

> The Sampling Frequency, the number of days between recurring field trips. **NB** Sampling Scheduling will be the subject of future development and is not in the scope here

> If there are Sampling Instructions that'll always apply to this Round, the user enters that text in a Sampling Instructions field for the Template

4. The user sequentially selects the Sample Templates to be included in the SRT from the Sample Templates tab. If it is a Client's Round, only Sample Templates belonging to the Client are available. For global SRTs, only the global Sample Templates:

5.   When done, the user [Saves] the SRT

4.5   Use Case. Viewing and editing SRTs

1.   Navigate to Sampling Round Templates in the setup or to a specific Client's, a list of active SRTs opens

2.   They me deactivated here or re-activated from an Inactive list

3.   Clicking a Round, opens it. It has 2 Tabs on its Edit page, Default and and Sample Templates

4.   The Edit/View tab displays the Template's 'header attributes' and authorised users, may edit them

> Title
>
> Description
>
> Sampling Frequency
>
> Instructions
>
> Number of Sample Points
>
> Number of Containers

5.   The LIMS calculates the total number of Sample Points and total number of Containers included in the Round and displays that

6.   The Sample Templates tab tables all the Sample Templates included

7.   This table of Sample templates table has columns for:
>   Title
>   Description
>   Sample Point
>   Sample Type
>   Composite Y/N
>   Lab Sample Y/N
>   Number of containers
>   Profile

8.   Authorised users may remove or add Sample Templates to the list

9.   After the edits, the user [Save] it

5 Use case. Creating Sampling Rounds and its Samples

Sampling rounds themselves carry the above information and for its creation a similar form to that of SRTs is used, with the only difference that the fields can be pre-populated by selecting a Template

If a Templates is not used the fields must be manually filled, from lookups where available

It has additional fields for

Expected Sampling date

Sampler

The Rounds samples are created in a hyperlinked Batch where they can be managed in Batch context

NB Because both Batch and Samples need to reference the Sampling Round they belong to, each gets a Sampling Round field

Role players. Lab manager, Lab clerk, Sampler

5.1 Creating a Sampling Round

Sampling rounds are created in *Open* state and may be *Vancelled* and once they are sampled, may be *Closed*

1. The user navigates to the global or Client's Sampling Rounds - the global Sampling Rounds are in the LIMS navigation tree

2. The user selects a Sampling Round Template, or not, and clicks [+add]

3. The Sampling round form opens with the values form the SRT used to complete their corresponding fields

4. As well as fields for

Title

Batch ID - if the Samples have to be added to an existing Batch, Open Batches can be selected from a lookup table here The lookup also shows the Batch Title. If no Batch is selected, a new Batch will be created for the Round. In the Rounds View page, this field is Hyperlinked to the Batch

Sampling date with date picker

Sampler with lookup list of all Samplers

5. The user may edit all of these

6. On a separate tab all the Sample Templates included are listed, from where the user may add or remove Sample Templates

7. The user may [Save] the Round to come back to it later

8. After the Round was saved, a [Create Samples] button is shown and the user may create its Samples by pressing the button

5.2 Creating a Sampling Round's Samples

1. The user navigates to a Sampling Round from a Client or global list (in LH nav bar)

2. Any of the fields saved earlier from the template may be edited - the system enforces data integrity by only allowing only valid entries from lookup widgets

3. The [Create Samples] button is not available while there are unsaved changes on the Round

4. Once saved, the button is shown and the user may create its Samples by pressing it

5. The LIMS then create the Round's Samples in an existing Batch if specified, else in a new Batch

6. The Samples are created in the same first workflow step set up as default, most likely Sampling is on and the Samples are created in *To be Sampled* state

7. Most logically the LIMS will be configured to print the Sample Labels at this point

8. If it was a new Batch, the Batch ID is written to the Sampling Round's Batch ID field and hyperlinked

9. The Round's ID is written to a (new) Sampling Round ID field on the Batch and hyperlinked

10. The Samples can now be managed in Batch Context

5.3 Sample Round Lists

Sampling Rounds are listed for clients and globally, with columns and values hyperlinked for

ID

Title

Create Date

Description

Sampling Round Template

Batch

Sampling Date

Sampler

The columns can be arranged with the standard Bika list widget

6   Using a Sample Round

The Samplers may print the Sampling Round to take with them on the field trip.

The Print includes the Sampling Instructions for the round

1.   The Sampling Round's data as in the list, ID, Title, etc. are printed in the page header

2.   Instructions

3.   As well as a Remarks field with enough space for it to be manually completed

4.   The Header is followed by a table of all the Samples and Partition to be taken, sorted on Sample Point title, with columns for:

Sample Point

Sample ID

Sample Type

Container

Sampling time - to be completed at the time

Remarks - with enough space for manual entries

5.   Rows in the table are wide to allow for writing

6.   Once back from the field trip, they transcribe the data from paper to the Sampling Round and Samples online

7.   If a Sample is checked off as Not Sampled, say because a borehole at the sampling point was dry, the the user cancels Sample created earlier

8.   When the user is happy that the Round is complete, he/she changes its status manually to closed